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Membership correspondence to Dr. Harold M. Camp, Monmouth, Ill.

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Editorials

DIAGNOSE POLIOMYELITIS EARLY

Poliomyelitis is one of the most disturbing factors in modern medical practice. This acute, specific, infectious, febrile disease occurs both in sporadic and epidemic forms. Though mainly incident during the first few years of life, young adults are affected with comparative frequency; and mature years are not free from its invasions, though it is comparatively rare after middle life. It is a common malady enough, frequently unrecognized, with complete recovery unlikely once paralysis sets in, and yet one attack seems to confer immunity.

The virus was isolated in 1913 by Flexner and Noguchi. During the acute stage in living patients and also in the bodies of those who have died from the disease, detection of the micro-organism is facile. It has been found in both examinations of the secretions of the mucous membranes of the mouth, the nose and the upper air passages as well as in the intestines. As it is proved beyond doubt that the virus is present in or on the nasal, buccal and respiratory mucous membranes and that it may be spread therefrom, importance is indicated for attention to isolation of the patient, the bed and the utensils and of adequate sterilization. Mild antiseptics should be employed for daily disinfection of the patient's mouth and nose.

A distressing angle of poliomyelitis is that in patients suffering from what might be termed the abortive form of the disease the presence of the virus has been demonstrated as well as in *contacts apparently healthy and who doubtless serve as carriers of the virus.*

Of poliomyelitis it may be written accurately that here is an evil that must be stopped before it has begun. Curative or even remedial treatment is held to be of small avail. Injection of the serum should be done prior to the onset of paralysis—in fact at the moment of recognition, and at least during the first twenty-four hours of the attack. If delayed longer than that the value

is nil. Next to recognition and serum injection the important point in curative action—preventive action really—is the ability for physicians to lay their hands on a sufficient supply of the serum. It has been proved that this serum that must be made from the blood of those recently convalescent can be made and stored so that its therapeutic efficiency can be kept over a period of three years. This human immune serum can be made by animal inoculation. For storage purposes it must be set away at an ice box temperature.

So excessive is the amount of bronchial secretions apt to be in acute poliomyelitis, that it has been pointed out that in the severe bulbar types of poliomyelitis death occurs as frequently from the patient drowning in retained secretions as from paralysis. Hence postural treatment is advocated—that is, nursing the patient with the head lowered.

Once the disease has developed about all that can be done for the patient is to stop it from reaching the paralytic stage.

ILLINOIS HEALTHIEST BIG STATE

According to the State Director of Health, Illinois is the healthiest of any of the big states. We quote from a summary of health condition in Illinois for the year 1930:

Among states with a 1930 population of over 5,000,000, Illinois experienced the lowest death rate reported last year. The states of California, Illinois, New York, Ohio, Pennsylvania and Texas are included in this group but the mortality statistics in Texas are so incomplete that the state is not in the U. S. death registration area and death rates are therefore not computed by the federal government for Texas. The death rate per 1,000 population in Illinois last year was 10.9. No other state in this group had a rate under 11.0 per 1,000 population. Pennsylvania stood second with a rate of 11.3 and Ohio third, with a rate of 11.4. Had the Pennsylvania rate prevailed in Illinois, the number of deaths would have been 3,060 greater than it was. Instead of 83,592 deaths, there would have been 86,652.

If the Ohio rate had prevailed in Illinois the number of deaths in 1930 would have been greater by 3,825 than it was. Had the California rate prevailed 5,355 more people would have died and had the New York rate prevailed 6,120 more people would have died in Illinois during 1930 than was actually the case. The death rates per 1,000 population for 1930 in states of more than 5,000,000 people were as follows:

Deaths Per 1,000 People, 1930	
Illinois	10.9
Pennsylvania	11.3
California	11.6
New York	11.7

Illinois also enjoyed favorable health conditions last year in comparison with close neighboring states. Iowa and Michigan had somewhat lower rates but Indiana, Kentucky, Missouri and Wisconsin had rates distinctly higher than that of Illinois.

The 1930 death rates per 1,000 population in these states were as follows:

Deaths Per 1,000 People, 1930	
Iowa	10.5
Michigan	10.6
Illinois	10.9
Kentucky	11.3
Wisconsin	11.3
Missouri	11.8
Indiana	12.1

Had the rate for Iowa or for Michigan prevailed in Illinois there would have been 3,060 or 2,295 fewer deaths, respectively, than actually occurred. Had the Kentucky, Wisconsin, Missouri or Indiana rate prevailed there would have occurred 3,060, 3,060, 6,885, or 9,180 more deaths respectively, than actually occurred.

These comparisons indicate that the people of Illinois enjoy health conditions superior to those that prevail in most states comparable in size and population. They show that in comparison with close neighbors Illinois enjoys favorable health conditions.

The general death rate in Illinois last year was the lowest ever recorded for the State since reliable statistics have been compiled. More significant still the death rate from tuberculosis and the infant death rate was the lowest on record. The rate from diphtheria for the State outside Chicago dropped to a new low level. Only 134 deaths from diphtheria occurred in the State outside Chicago giving that portion of the population a rate of 3.1 per 100,000 against a

rate of 4.1 for 1925, the previously lowest rate on record.

These observations indicate that the prevailing favorable health conditions have resulted in large part from the activities of an alert and competent medical profession and state and local health departments and from the demands of an intelligent and well informed public.

HOSPITALS NOT RESPONSIBLE FOR THE HIGH COST OF SICKNESS HOSPITAL CARE NEVER INCREASED IN COST IN PROPORTION TO OTHER NECESSITIES OF LIVING

A roar and cry is heard on many sides that there have been no reductions in hospital costs despite the fact that foodstuffs and wearing apparel have dropped in the past year, and that while labor has not lowered its wage that millions of men and women are without work.

While it is true that the high cost of hospitalization lies at the door of the overhead rather than at the skill of its scientific workmen, yet as hospital care never increased in proportion to the increases in other necessities of living, it is at once a difficult and yet a facile task to explain this lack of reduction.

Maintenance of a hospital is a heavy burden in many places other than the pantry and the linen closet. Labor has not cut its price but there is scarcely a public institution from universities or museums to less hotels de Dieu, that more or less depend upon endowment and favor to make both ends even partially meet that has not faced withdrawal or depreciation of donations from men, women, and even trust funds that were "caught" in the "crash."

To go a little farther into the economic woes of the land, townships, villages, counties and cities are in many instances bankrupt. Yet the hospital service must continue at par. Sickness and nature know no detour of their ways. One of Chicago's prominent obstetricians made this complaint to me the other day, "I have never done more work in twenty years of practice nor had less pay. It seems that the only thing idle men and women can increase is the birthrate."

The hospital and the doctor have been running close to the edge ever since the war shot up living costs to sky high limits. And here are a few citations to prove it.

"Are modern hospital rates excessive? The bureau of statistics of the labor department at Washington in a survey of hospital conditions in the United States reached the conclusion that the cost of getting well has not risen in proportion to other living costs.

"Maintenance expense of four representative Chicago hospitals was taken as a basis of comparison with the rates charged the public. The average cost to the hospital per day per patient was $2.83 in 1913 and $6.65 in 1926. Yet the average charge for a ward bed only doubled—being advanced from $2.00 to $4.00. Increase for private rooms was only 33 per cent. The average price increase to the public for all hospital accommodations was but 66 per cent., as compared with increased maintenance costs of 135 per cent. A similar investigation among representative Pennsylvania hospitals showed that the charges to the patient had grown by 88 per cent. since the days before the war, while the institutions themselves were facing budgets 123 per cent. greater.

"Efficiency in hospital management has cut short the stay of the average patient by three days, or from fifteen days in 1916 to twelve days in 1926, thus balancing the average cost of illness. A patient secures at practically no greater expenditure, the same accommodations he enjoyed a few years ago during a much longer period of convalescence.

"While the hospitals have been raising their rates considerably less than 100 per cent., educational costs have risen by 207 per cent. since 1916, the appropriations in cities for health and sanitation have been advanced 156 per cent. and the budgets of charity organizations are 114 per cent. greater than ten years ago.

"The hospital faces a dual problem. It is a semipublic institution, with a certain obligation toward the community. This it strives to meet by an immense amount of charity work and often by adjusting its rates to fit the patient's pocketbook. At the same time the hospital should pay its way. The public's duty is to cooperate in recognizing sickness costs as legitimate items of household expense and by providing an emergency fund with which to meet them. The appropriation for sickness in the average family should be $100 a year, the federal survey shows."

"Yet in how many families is that appropriation made? And in how many families would

an accurate census show but that this amount twice and thrice over had been appropriated for such luxuries as automobiles, fur coats, radios, and expensive furnishings.

" 'Needs must when the devil drives' is the motto in far too many a home, with the physician the complacent goat, and his side partner, the hospital, only slightly better off."

DR. FERGUSON IS RECOVERING

Dr. Ralph R. Ferguson, president of the Illinois State Medical Society, is recovering from a long siege of severe illness. This is undoubtedly one of the most welcome Thanksgiving greetings that we can give doctors throughout the state.

President Ferguson was unable to attend the state meeting in May at East St. Louis, as at the time he had undergone a major surgical operation. Unfortunately he was obliged to undergo a second operation in October.

From this second ordeal Dr. Ferguson is rapidly recovering, and we have every reason to believe that in the course of a few months Dr. Ferguson will be restored to health and returned to his normal activities.

ROCK ISLAND COUNTY MEDICAL SOCIETY HONORS PIONEER PHYSICIANS. MEDICAL HEROES OF A HUNDRED YEARS AGO RECEIVE MERITED TRIBUTE

Not taps but reveille has sounded anew to the memory of two distinguished pioneer physicians whose mortal services ended a century ago.

As a tribute to Dr. John Gale, U. S. A., and Dr. Richard Coleman, U. S. A., who are buried at what was once Fort Armstrong, but is known now as the Rock Island (Ill.) Arsenal grounds, the Rock Island County Medical society on Oct. 20 unveiled a memorial tablet.

The tablet is placed on a native boulder near the graves of the two physicians, slightly south of the clock tower.

Inscribed on the tablet is—

"John Gale, surgeon United States Army, born in New Hampshire, 1790, died at Ft. Armstrong, Rock Island, Ill., July 27, 1830; Richard M. Coleman, assistant surgeon, United States Army, born in Kentucky, died at Ft. Armstrong, Rock Island, Ill., Sept. 2, 1832.

"These men served with distinction at many frontier posts as surgeons of Col. Henry Atkinson's expedition to the mouth of the Yellowstone in 1825 and performed medical service.

"To the memory of these pioneer physicians this tablet marking their last resting place is erected by the Rock Island County Medical society, A. D. 1931."

The memorial was unveiled at 5 p. m. by Dr. W. H. Myers, president of the Rock Island County Medical society and accepted by Col. D. M. King, commanding officer of the Rock Island arsenal. Dr. Stuart W. Adler spoke at the unveiling. For the banquet at 7 p. m. Dr. Myers in presiding made the introductory remarks. Dr. Joseph De Silva was toastmaster. Dr. F. E. Bollaert sang. John H. Hauberg, vice-president of the Illinois Historical society, discussed the U. S. Army surgeons at Fort Armstrong. The address of the evening, "Drs. John Gale and Richard Coleman," was ably given by Dr. Irving S. Cutter, dean of the Northwestern University Medical school and historian of the Illinois State Medical Society.

Officers of the Rock Island County Medical Society are: President, Dr. Myers; vice-presidents, C. H. Anderson and C. J. F. Rochow; secretary, W. F. Schroeder; treasurer, C. C. Ellis, and medical legal advisor, A. T. Leipold. Flowers for the occasion were secured from the Watertown Hospital florists by Mrs. C. H. Anderson, president of the Women's auxiliary of the Rock Island County Medical society, while the color bearers, color guard and bugler came from the 33rd ordinance company, Rock Island Arsenal.

Quoting from the orators of the evening, it is well to note that in part, Dr. Cutter said:

"It is significant that the Rock Island County Medical society should honor the memory of these two men, who played a conspicuous part in the development of the great west. John Gale is first mentioned in army records for distinguished service at the battle of Lake Erie during the War of 1812. There he rescued the wounded and ministered to their needs at the risk of his own life.

"Next he was at Ft. Selby, Detroit, Mich., with the 3rd United States infantry. Subsequently he commanded a detachment that went to Ft. Dearborn at Chicago. It was reported that not a single soldier died on the march nor

was there any illness of any consequence among members of the detachment for two years.

"Eventually he was ordered to join Colonel Henry Atkinson's expedition to the mouth of the Yellowstone. Dr. Coleman was also a member of this party. The expedition left in the spring of 1819 and arrived at Council Bluffs, Iowa, by October of the same year. A cantonment was built in the lowlands instead of upon a healthful cliff and during the fall and winter 159 of the 700 soldiers died of scurvy. Except for the superhuman efforts of Drs. Gale and Samuel G. Mower many would have died.

"Sergeant John Gale was more than an army physician. He was a trusted lieutenant. He was often sent on important missions and on each occasion was complimented on the results of his expedition and report. He signed most of the treaties made by the Indians at Ft. Atkinson.

"He helped to establish Ft. Leavenworth and in 1828 the troops were removed because of disease. Dr. Gale reported the fort was adventageous as an army post and the troops were ordered to reoccupy it on his recommendations.

"John Gale was a versatile character. He is frequently mentioned in history as a peacemaker."

"Dr. Gale was married in 1822 to an Indian maiden. Forced to abandon his wife and daughter when the squaw refused to accompany him when he was transferred to Ft. Leavenworth in 1827, he made provisions for their future before his departure.

"The daughter married and Dr. Gale's granddaughters and grandson rose to distinction. One granddaughter became a doctor and the other helped Indians at Omaha, Neb., after she had been educated in the United States and abroad. The grandson, Francis La Flesche, is listed in "Who's Who in America," as an eminent ethnologist.

"Dr. Gale was sent up the Mississippi river from Jefferson barracks to negotiate treaties with Indians north of Ft. Armstrong. This was in 1830. Twelve days before he died he signed a treaty with Indians up the river. He returned to Ft. Armstrong, became ill, and died July 27, 1830.

"History is not generous in recording the deeds of Dr. Coleman. He nevertheless was an outstanding figure among the isolated surgeons of the frontier army. Dr. Coleman's fortitude was unparalleled. Dr. Coleman was a surgeon at Ft. Crawford. Prairie du Chien, Wis., when he was ordered to Fort Armstrong in 1832 after the Black Hawk war. Cholera was raging here and he died Sept. 2, 1832, of the disease about two weeks after arriving at Ft. Armstrong. Dr. Coleman rendered much of his meritorious service on Colonel Atkinson's expedition to the Yellowstone."

FORT ARMSTRONG HISTORY

Mr. Hauberg gave an historical account of Fort Armstrong and the blockhouse which has been reproduced on the Rock Island arsenal. He enumerated other historical sites on the arsenal which have been marked and gave Dr. Cutter credit for the movement to honor the two pioneer army surgeons.

"Ft. Armstrong," Mr. Hanberg said, "was named in honor of the secretary of war in 1818. It was then headquarters for soldiers, the Indian agent, interpreter, traders and army surgeons.

"The characters closely identified with the history of this community, included Antoine, LeClaire, Colonel George Davenport, Russell Farnham and Major Thomas Forsythe. Among the early army physicians were Drs. Thomas Lawson, John Emmerson, C. A. Finley, Samuel B. Smith, Samuel C. Mower, John Gale and Richard M. Coleman.

Drs. Gale and Coleman were presumably interred in the old arsenal burial plot. Part of it lies beneath the elevation for the tracks of the Rock Island Lines across the arsenal. Much of the cemetery was graded away to provide the elevation for the railroad tracks but the boulder on which the tablet has been placed was uncovered during the excavation and has remained undisturbed in its original resting place."

HOW HEALTH INSURANCE AFFECTS GERMAN DENTISTS

The committee on the study of dental practice of the American College of Dentists have presented highly illuminating data on the menacing effect of insurance on dental service in Germany.

The findings of the committee on the study of dental practice confirm the numerous reports and statements that have been made for over a

period of twenty years by Dr. Ochsner and numerous other medical men and economists both in America and elsewhere to the effect that as a result of the adoption of compulsory health insurance forty-five or fifty years ago the German people are now receiving the worst sort of medical and surgical service imaginable; we quote from the committee's report:

Germany was the first nation to install health insurance. Now after almost half a century of experience it is, in spite of the many changes that have taken place, possible to pass judgment on nearly all its results.

The fact that German dentistry was from the beginning divided among two classes of practitioners has deeply influenced the relations of both insurance and dentistry. The *Zahnärzten* are physicians who have specialized in dentistry. Alongside this class there grew up a constantly increasing number of dental technicians. As prosthetic dentistry grew in importance as compared with dental surgery these came to take over more and more of the dental field, especially among the insured.

When insurance was established there was practically no prosthetic dentistry, at least among the working class. There were thus three lines of progressive increase; first, number of insured; second, relative importance of prosthetic dentistry; and third, largely as a result of the other two, in the number of dental technicians and consequent scope of their work.

Insurance societies seek the cheapest service that will be satisfactory to their members. In the beginning, at least, the dental technicians charged less than the dental surgeons. In many cases *insurance* physicians prescribed and directed the work of dental technicians.

Soon the latter began to develop their own special professional skill, standards, educational institutions, and organizations. At the present time they have obtained official recognition for the graduates of their rental institutions, which they claim are modeled on the dental schools of the United States. They have assumed the name of "dentists" in spite of strenuous protest from the *Zahnärzten*. They now largely dominate the great insurance practice.

Unfortunately the insurance societies were able to play upon the antagonism of these two branches and thereby drive the rewards for insurance dental work down almost to the starvation point. At first the *Zahnärzten* were not so greatly affected because dentistry was still a luxury profession, but when insurance brought so large a section of the population, hitherto almost without dental care, within its scope, it dominated dental service.

When the two divisions of the dental profession tried to cooperate against the insurance societies, the latter established great clinics. It is complained that in many cases excessive sums were invested in the building and equipment of such clinics largely for advertising purposes. These clinics were staffed by whichever section of the profession would be hired most cheaply. Usually both branches were utilized, but the number of "dentists" so employed was much the larger.

The political and social power of the societies and the weakness and unpreparedness of dental organizations prevented the profession from maintaining control of clinics. These are, therefore, operated almost entirely in the interest of the societies with a disregard for professional interests. Once established they did not confine themselves to insurance patients, but entered upon general practice on a strictly commercial basis. They even invaded the "luxury" practice and supplied private patients with expensive dentures of precious metals such as are forbidden in insurance practice. In short, the course of evolution, political conditions, weakness of preparation and divided organization have all combined to bring upon the German dental profession the very worst efforts of the insurance system.

SPAN OF LIFE HAS NOT INCREASED—MISLEADING PROPAGANDA TO THAT EFFECT HAS GROWN APACE

Modern civilization foreshortens the span of life. We are really less clever than we think. This abridgement of life expectation after forty-five, is the price of what we call success. Rapid increase of degenerative diseases stands out as an incidental phenomenon of American life rather than of American individuals. Degenerative diseases are rampant in the United States.

Inherent responsibility for this prevalence of degenerative diseases is intertwined with the tension under which American citizens live and this

intensity is reflected in communal life throughout the nation.

Authoritative statistics confirm this contention in the face of fallacious statements appearing in lay magazines, or used otherwise as propaganda for various purposes, or published in some public health journals, or given out indiscriminately by well-meaning but misguided statisticians. Erroneous compilations and conjectures breed in the minds of the general public a feeling of false security.

This adverse development of the range and extent of degenerative diseases might be accepted as a mere human rotation were it not that the tension from which these troubles spring is engendered by the common striving for wealth, power and material aggrandizement and often the results of its attainment. Through the creation of the false standards arising from such conceptions of life, the great American public has deprived itself of peace and leisure and has lost the art of living wisely.

After all may there not be a possibility that as a nation as well as individuals we pay too dearly for our material success, or modern Mammon worship?

The average American is convinced beyond argument that the civilization he has created in his native land is of a beauty and intrinsic value so unique that it is absolutely priceless. This is admirable from a standpoint of loyalty and nationalism. There might be nothing wrong if it did not rob us of the knowledge of the superiority of a civilization that puts health first and wealth, second.

Take living conditions elsewhere. In Europe for example, men who accumulate enough to maintain a comfortable living retire to a life of comparative leisure, though probably not of extreme luxury. In other words the average European knows when he has had enough. He is willing to take his labor as he does his liquor—in moderation.

The bulk of America's rich men never lose the itch to become richer. A man who has acquired a modest competence never thinks of quitting but only of working harder. He will work hard, but he will gamble with his savings with the idea ever in mind that if he could make one dollar out of a dime, that he should not stop until he had made first tens and then hundreds more out of his modest capital.

Opportunities ever at hand in America are conducive to whetting the gambling instinct in every man. Legitimate chances for wealth surround us. Is it surprising then, that a man who has made a small fortune on a small gamble should hesitate to take to heart the adage

"He either fears his fate too much
Or his desert is small
Who dares not put it to the touch
To win or lose it all."

If the venture comes out successfully, well and good. He takes his profits and goes on to another gamble. To be sure the strain may have shortened his life, or have crippled and aged him prematurely. But does he reck of this? No! And if the gamble has turned out unsuccessfully—the statistics on American suicides answer that. Every year the group increases of those who kill themselves because they can not cover their material obligations. The last gamble has had failure, disgrace, death itself holding the stakes.

Certain publicists, magazine writers and health statisticians contend that notwithstanding the complex, racking method of modern existence that the span of life has been greatly lengthened in the past fifty years. Since 1880 so they say this span has been lengthened nearly fifteen years.

On the surface this might seem to be truthfully said. Analysis of relevant figures discloses that what appears to be an apparent prolongation of life at the age of 56 has been a saving at the other end of the line. In other words this is not a lengthening of adult life but a saving of child life.

The majority of people fail to distinguish between the span of life of the human race and the average age at death of individuals.

The expectation of life rather than the length of life is the utmost that the science of sanitation and public health work has been able to achieve.

Unfortunately the tremendous advances made in this direction have misled many over optimistic enthusiasts, into the belief that man has found methods for prolonging the span of life, of the race, and has added to its longevity.

Science has been able to achieve a greater expectation of life but not a prolongation of life.

Perhaps science might have achieved something in the way of prolongation of the span of life, if the individual himself, as an individual and as a nation, would lend a hand. Life expectation has increased because not only can contagion be prevented but infants and children can be made to observe rules of hygiene. The American adult on the other hand, takes the keenest pleasure in living so as to break all hygienic tenets.

For example, rest is an almost unknown factor in American life. Overeating is an almost universal condition. Coupled to which indulgence in impure alcoholics and excesses of the boudoir show a shameful percentage. The "wild party" with its "wild women" has become an everyday affair.

Right there is a common causative factor for the increase, steady, insidious and terrible of degenerative diseases.

Nowadays more persons live to maturity before death overtakes them, than in years previously. The average age of life is increased from 32 to 56. So that the average life of individuals is greater but the span of life at best remains stationary, and in all probability has decreased.

Improved sanitation and greater care has reduced infant mortality. A greater number of infants grow up to die at maturity. The number of adult deaths has increased. But the age of adult deaths, or the span of life has not done so. There are no greater numbers of centenarians or of "grand old men" than there were in former years in proportion to the population.

Expectation of life indicates that average age to which people may expect to live. The average age at death is analogous in its scope. The span of life indicates the maximum number of years that man may live, as a mortal being.

This distinction must be reckoned with before accurate statements and comparisons can be made. It is too often disregarded because misunderstood.

Figures upon which optimistic statements are based result from the remarkable diminution of deaths during infancy and childhood. Elimination of preventable ills such as immunization against smallpox, diphtheria, typhoid fever, general hygiene's higher standards and better supervision of food and water supplies, and sewage disposal operate to make more men live longer, but do not lengthen the measure of life.

Nor has anything happened to encourage the hope that the span of life may be lengthened.

Marked decrease in preventable disease due to a lessening of contagion and diseases due to malnutrition in infancy and childhood, has been effected. But there has been a marked increase in what is known as the degenerative diseases appearing after middle life such as heart disease, diseases of the arteries and circulatory system, cancer, Bright's disease. Obviously, therefore, the span of life has not been prolonged and life still has its natural limitations.

In the majority of cases it is "the pace that kills" that gives a black eye to any possibility of increasing the span of life for the average American. As a matter of fact a man should be of the greatest service to humanity in those two decades that follow his sixtieth birthday.

The exception that was Edison should be the rule. When a few weeks ago Edison died at 84 in full possession of all his mental faculties still hard at work and intent upon seeking a substitute for rubber, the English speaking world regarded him as a genius of longevity as well as a masterman of science. George Bernard Shaw at 75 still in the front ranks of his art is regarded with awe, and by the younger men, almost as a visitor from beyond. Yet these men like Nordau, Gladstone and Justice Holmes of the United States Supreme Court are really only in the fullness of years and the ripeness of life. Edison, Shaw, Nordau and Gladstone labored more indefatigably than does the average American business man who is run down at sixty and whose maximum power approximates 40 years of age, when as a matter of scientific computation he should at seventy years be in the zenith of his intellectual, moral and spiritual best. As it is men wither on the branch, twenty years too soon. For this premature aging, the gait of modern life is responsible. It takes a man out of his natural stride.

Civilization affords men today a forced, hothouse training. There is early flowering, early withering away. Self-engendered, and self-nurtured is this nerve strain and not all the resources of medical science can bring about its relaxation. Few men serve out three score years and ten without some enfeeblement of their physical and intellectual powers.

In leisurely times, steeped in quietude when

Robert Browning brought to life his Rabbi Ben Ezra, there lingered the philosophy,

"Grow old along with me,
The best is yet to be
The last of life
For which the first was made."

But now, the last is almost gone before the first is ended. No longer do we burn the candle at both ends. We have speeded up even more than that. We have cast out the candles. Life has become an incandescent, flushed with the voltage that blows its fuses far too soon. We do not hearken even to St. Vincent Millay's plea for the pretty candle, "It gives a lovely light." We must, we do, explode, betimes.

DOCTORS DESIRING TO PRESENT PAPERS BEFORE THE 1932 MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY

Take Notice

Section on Public Health and Hygiene

All persons desiring to preface and read papers before the section on Public Health and Hygiene of the Illinois State Medical Society to be held at Springfield in 1932 should communicate with the chairman of the section, Doctor Arlington Ailes, LaSalle or Doctor Arnold Kegel, Chicago.

Section of Radiology

Doctors wishing to present papers before the State Society meeting to be held at Springfield, May 17, 18, 19, 1932, kindly communicate with Dr. E. L. Jenkinson, Chairman, Chicago and Dr. P. B. Goodwin, Secretary, Peoria.

Section on Medicine

It is desired by the officers of the Medical Section that any members desiring to present papers at the Springfield session notify *both* the Chairman and Secretary at the earliest possible date. Chairman, Dr. Warren Pearce, Quincy and Secretary, Dr. W. H. Nadler, 8 South Michigan Avenue, Chicago.

Section of Eye, Ear, Nose and Throat

Any member wishing to present a paper at the Eye and Ear Section meeting at Springfield, May 17 and 18, will please communicate immediately with Dr. Frank Novak, Jr., Secretary, 30 North Michigan Avenue, Chicago.

COURSE OF OXYGEN THERAPY AT MICHAEL REESE HOSPITAL

Michael Reese Hospital is offering a four-day course of oxygen therapy, November 17-20.

The course will be given by members of the clinical and laboratory staffs of the Michael Reese Hospital. The principles and application of oxygen therapy will be presented and will include discussion of different types of resuscitation apparatus including the adult and infant sized Drinker machine and also the use of carbon dioxide oxygen mixtures in various conditions.

There will be an exhibition by various manufacturers of the most important types of oxygen therapy and resuscitation apparatus which are at present available. This exhibition will include a portable oxygen room which can be set up in a private home in an hour. Demonstration of these various types of apparatus and instruction in their use will be given.

EDUCATIONAL COMMITTEE GIVES SERVICE DURING

September and October, 1931

SPEAKERS BUREAU:

60—Lay meetings addressed by members of the Illinois State Medical Society.

Woman's Civic Club.

State Association Y. M. C. A. Health Directors.

Lions Clubs.

Parent Teacher Associations.

Mothers' Clubs.

High School Assemblies.

Nurses Alumni Associations.

County Teachers Institutes.

Kiwanis Clubs.

Federation of Women's Clubs (County).

Home Bureaus.

Rotary Clubs.

Club Y. M. C. A. College.

Woman's Auxiliary.

SCIENTIFIC MEETINGS:

Decatur Medical Society—W. K. Lasher, "Medical Economics".

Will Grundy County—Film, "Infections of the Hand".

Staff Paris Hospital—Robert W. Keeton.

Sangamon County—Frederick B. Moorehead, "Problems of Oral and Plastic Surgery".

Rock Island County—Carey Culbertson, "Gynecology".

Union County—E. J. Weber.

Will Grundy County—Frank F. Maple, "Obstetrics".

Jackson County—Jean McArthur, "Education by the Medical Society".

Jackson County—James T. Gregory, "Acute Appendicitis".

Alexander County—Robert S. Berghoff, "Syphilis of the Heart".

McHenry County—Edwin W. Hirsch, "Treatment of Chronic Gonorrhea".

Alexander County—J. E. Kelley, "Some Forgotten Points in the Technique of Operation for Inguinal Hernia".

Coles—Cumberland County—Hugo W. Traub, "Immunization".

Iroquois County—Dudley T. Dawson, "Mental Hygiene".

Perry County—N. C. Iknayan, "Renal Insufficiency".

Will Grundy County—Richard H. Jaffe, "Pathology of Pulmonary T. B.".

Monmouth Medical Club—Charles P. Blair, "Injuries to the Spine".

Winnebago County—Andy Hall.

Peoria City Medical Society—Francis Eugene Senear, "Modern Conceptions Concerning the Treatment of Syphilis".

Will Grundy—Charles M. McKenna, "Renal Tuberculosis".

Fulton County—A. C. Ivy, "Studies on the Etiology of Gall Stones".

Iowa—Illinois Central District Society—George de Tarnowsky, "Treatment of Low Back Pain".

Paris Hospital Staff—Robert S. Berghoff, "Syphilis of the Heart".

Will Grundy County—Clarence L. Wheaton, "Lobar Pneumonia".

Jackson County—Herman H. Cole, "Heart".

Tri-County Society—George H. Marquardt, "Vascular Pains and Vascular Edema of the Legs, Their Diagnosis and Treatment".

Tri-County Society—Harold O. Jones, "Gynecology".

Tri-County Society—Lowell D. Snorf, "Treatment of Peptic Ulcer and Its Complications".

Will-Grundy County—Channing W. Barrett, "Diagnosis and Treatment of Extra-Uterine Pregnancy".

Pike County—Dudley T. Dawson, "The Responsibility of the Psychiatrist in His Community".

LaSalle County—James H. Hutton, "Recent Advances in Endocrinology".

LaSalle County—Miss Jean McArthur, "A Medical Society's Responsibility for Health Education".

LaSalle County—W. K. Lasher, "The Business Side of Medicine".

Will Grundy County—A. James Larkin, "Radium in General Practice".

RADIO:

35—Regular broadcasts from stations WJJD, Monday, Wednesday and Friday noons at 1:00 o'clock and from WGN every Tuesday at 11:50 o'clock.

53—Talks during Young Mothers' Hour from WJJD in cooperation with the Chicago Pediatric Society.

REGULAR BROADCASTS

Jay Ireland—"Appendicitis in Children."

Frank E. Nagel, Jr.—"Infantile Paralysis."

Robert Blue—"The Eye as a Factor in Health and Efficiency."

Alfons R. Bacon—"Obstetrics."

Frederick B. Balmer—"Menaces to Health."

Cyril Hale—"The Disease of Mystery—Dementia Praecox."

John S. Ashby—"What Is Indigestion?"

A. H. Hallman—"Diabetes."

W. W. Dalitsch—"Focal Infections."

S. G. Plice—"High Blood Pressure."

Clarence Naymann—"The Relation of Extroversion and Introversion to Insanity."

G. K. Fenn—"Angina Pectoris."

Alfred H. Hallman—"Diabetes."

Alfred N. Murray—"Preventable Injuries to the Eye."

L. C. Morris—"Periodic Health Conferences."

Benjamin Goldberg—"Early Recognition of Tuberculosis."

Alexander S. Hershfield—"Mind Health."

Meyer Solomon—"What Is a Nervous Breakdown."

Edward Howland—"How to Grow Old Slowly."

Harry E. L. Timm—"Early Signs and Symptoms of Common Diseases That Become Dangerous."

C. L. Birch—"Hemophilia."

Walter R. Fischer—"Growing Feet."

Harry A. Oberhelman—"The Commoner Skin Infections."

H. M. Leaf—"A Few Causes of Common Abdominal Complaints."

Edward A. Roling—"The Care of Eyes During Childhood."
Carl T. Stephan—"So You Are Going to Have a Baby."
J. R. Ballinger—Mental Mechanisms of Fear."
S. C. Robinson—"Let Well Enough Alone."
Loren W. Avery—"Migraine."
Andrew W. McNally—"Social Disease."
Charles E. Franklin—"Common Colds."

PRESS SERVICE:

1,423—Releases.

804—Regular Press Service.

54—Monthly Service.

19—Newspapers, re meeting Alexander County Medical Society.

45—Newspapers, re meeting Bureau County Medical Society.

60—Newspapers, re meeting Fulton County, Medical Society .

68—Newspapers, re meeting LaSalle County Medical Society.

41—Newspapers, re meeting Perry County Medical Society.

117—Newspapers, re meeting Tri County Medical Society.

115—Newspapers, re meeting Southern Illinois Medical Association.

20—Newspapers southern part of state about "Appendicitis".

16—Newspapers Ford County about "Diphtheria".

8—Newspapers Henry County about "Infantile Paralysis".

48—Newspapers re branch meetings Chicago Medical Society.

2—Chicago Association of Commerce, re meetings Chicago Medical Society and Scientific Societies.

6—Chicago Rock Island Magazine.

13—Health Articles written and approved by Committee:

No Place Like Home—For Accidents.
Child's Right to Health, The.
Mind Health.
The Diabetic Patient.
Damage Caused by Infantile Paralysis.
Warts.
How to Grow Old Slowly.
Preventable Injuries of the Eye.
Eating Habits of Children.
A Baffling Skin Disease.
Hemophilia or Bleeders Disease.
Arthritis.
Middle Age.

MISCELLANEOUS:

For the third consecutive year the Educational Committee has been invited to schedule speakers to present a series of talks to the members of the Pre-Medical Pre-Dental Club of the Central Y. M. C. A. College, Chicago.

Request for copies of health talks from the New York State Tuberculosis Committee.

Special diphtheria immunization program and material for Naperville.

Material supplied to physician's wife who edits a local P. T. A. publication. Health column in this bulletin will be credited to Educational Committee.

Mimeographed notice for two meetings of the Woman's Auxiliary of the Chicago Medical Society.

Study outlines and material to Parent Teacher Association.

Material on "Movies and Child Health" for Quincy Parent Teacher Association.

Article appeared in the October, 1931, American Journal of Public Health, telling of work carried on by the Illinois State Medical Society through the Educational Committee.

Request from Lake County Society, Indiana, for information about Educational Program to serve as a pattern for Indiana.

The Educational Committee had an exhibit at the White House Conference on Child Health and Protection, Chicago Region, at the Palmer House, October 30 and 31. The exhibit showed the work which the medical profession is doing in child and parent education.

Special material sent to Clinton County to be used during a smallpox vaccination and diphtheria immunization campaign.

Respectfully submitted,
JEAN MCARTHUR, Secretary.

ANNUAL MEETING OF THE AMERICAN COLLEGE OF PHYSICIANS

The Sixteenth Annual Clinical Session of the American College of Physicians will be held in San Francisco, California, April 4-8, 1932. The headquarters in San Francisco will be the Palace Hotel, where the general scientific sessions, registration, and exhibits will be held. Clinics will be conducted in various hospitals and institutions in San Francisco and near-by communities.

Dr. S. Marx White, Minneapolis, President of the College, has in charge the selection of speakers and subjects on the general program, while Dr. William J. Kerr, San Francisco, Professor of Medicine at the Uni-

versity of California Medical School, is the General Chairman of the Session, and is responsible for all local arrangements, in addition to the arrangement of programs and demonstrations. Following the San Francisco Session a post-convention tour will be conducted through Yosemite Valley, Southern California, (with two days in Los Angeles) and the Grand Canyon of Arizona.

The attention of the secretaries of various societies is called to the above dates, in the hope that their societies will select non-conflicting dates for their 1932 meetings.

HOSPITALS APPROVED FOR INTERNSHIPS

By the Council on Medical Education and Hospitals of the American Medical Association. Revised to Aug. 15, 1931.

The following Illinois general hospitals are considered in position to furnish acceptable internships for medical graduates.

Name of Hospital ILLINOIS	Location	Number of Beds						Internships					
		Surgical	Medical	Obstetric	Pediatric	Other	Total	Affiliated—for What Service	Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
Alexian Bros. Hosp. (male patients only)	Chicago	168	96	..	..	25	289	(22)	4	Ap.	12	July	$50	Req.
American Hospital	Chicago	55	55	25	15	..	150	No	4	Ap.	12	June	$25	No
Augustana Hospital	Chicago	150	50	30	25	95	350	No	13	Ap.	18-24	Jan. & July	No	Req.
Chicago Memorial Hospital	Chicago	32	32	20	4	20	108	No	4	Ap.	12	July	$25(j)	Req.
Columbus Hospital	Chicago	50	30	23	21	35	159	No	4	Ap.	12	July	$25	None
Cook County Hospital	Chicago	yes	yes	yes	yes	yes	3,300	No	99	Ex.	18	Jan. & July	No	None
Edgewater Hospital	Chicago	yes	yes	22	18	yes	140	No	5	Ap.	12	July	$25	None
Englewood Hospital	Chicago	yes	yes	22	6	..	102	No	4	Ap.	12	Jan. & July	$25	Req.
Evangelical Hospital	Chicago	52	30	60	18	40	200	No	6	Ap.	12	July	$25(k)	None
Frances E. Willard Hospital	Chicago	78	45	26	10	26	185	No	5	Ap.	12	Jan. & July	No	Req.
Garfield Park Hospital	Chicago	yes	yes	yes	yes	yes	196	No	7	Ap.	12	July	No	None
Grant Hospital	Chicago	60	34	50	yes	yes	300	No	8	Ap.	12	July	No	Req.
Holy Cross Hospital	Chicago	yes	yes	yes	yes	yes	124	No	4	Ap.	12	June	$10	None
Hospital of St. Anthony de Padua	Chicago	117	40	48	15	..	200	No	6	Ap.	18	(1-c)	$10	None
Illinois Central Hospital	Chicago	yes	yes	yes	yes	yes	300	No	8	Ap.	12	(1-c)	No	Req.
Illinois Masonic Hospital	Chicago	yes	yes	25	6	yes	167	No	6	Ap.	12	July	No	Req.
Lake View Hospital	Chicago	50	27	31	..	32	140	No	4	Ap.	12	July	$25	None
Lutheran Deaconess Home and Hospital	Chicago	yes	yes	yes	yes	yes	209	No	7	Ap.	12	Apr. & July	$25	None
Lutheran Memorial Hospital	Chicago	71	47	32	..	35	185	No	4	Ap.	12	July	$25	Req.
Mercy Hospital	Chicago	yes	yes	yes	yes	yes	400	No	16	Ex.	12	July	No	None
Michael Reese Hospital	Chicago	32	40	36	129	119	356	(23)	32	Ap.	24	Jan. & July	No	Op.
Mother Cabrini Memorial Hospital	Chicago	59	21	33	16	39	168	No	4	Ap.	12	Feb. & June	$25	None
Mount Sinai Hospital	Chicago	yes	yes	44	21	44	204	No	9	Both	12	July	No	Op.
Norwegian-American Hospital	Chicago	74	49	50	12	65	205	No	7	Ap.	12	Jan. & Apr.	$20	Req.
Passavant Memorial Hospital	Chicago	yes	yes	yes	yes	yes	198	No	13	Ap.	12-24	(1-d)	No	Req.
Presbyterian Hospital	Chicago	yes	yes	40	50	yes	412	No	30	Ap.	12-16	Varies	No	Req.
Provident Hospital (coll)	Chicago	yes	yes	5	8	yes	65	No	6	Ap.	12	July	No	Req.
Ravenswood Hospital	Chicago	yes	yes	42	5	yes	195	No	4	Ap.	12	Varies	$25	None
Research and Educational Hosp. Univ of Ill.	Chicago	30	37	17	14	92	190	No	12	Both	12	July	No	None
Roseland Community Hospital	Chicago	yes	yes	29	yes	24	125	No	4	Ap.	12	July	$50	None
St. Anne's Hospital	Chicago	109	56	57	22	66	310	No	7	Ap.	12	July	No	Req.
St. Bernard's Hospital	Chicago	46	82	51	21	..	200	No	8	Ap.	12	July	No	None
St. Elizabeth's Hospital	Chicago	yes	yes	yes	yes	yes	350	No	6	Ap.	12	July	$25	None
St. Joseph's Hospital	Chicago	90	50	35	25	..	200	No	7	Ap.	12	Apr. & July	No	Op.
St. Luke's Hospital	Chicago	184	72	31	yes	472	659	No	42	Ex.	12	Apr. & July	No	Req.
St. Mary of Nazareth Hospital	Chicago	122	50	38	16	24	250	No	8	Ap.	12	July	No	None
Swedish Covenant Hospital	Chicago	80	55	45	..	45	225	No	6	Ap.	12	Mar.	$30	None
U. S. Marine Hospital	Chicago	35	88	..	..	27	150	(24)	5	Ap.	12	July	(b)	None
University Hospital	Chicago	yes	yes	yes	yes	yes	100	No	3	Ap.	12	July	$15	Op.
University of Chicago Clinics	Chicago	yes	yes	..	yes	yes	333	(25)	22	Ap.	12	(1-c)	No	Req.
Washington Boulevard Hospital	Chicago	yes	yes	yes	..	yes	110	No	6	Ap.	18	(1-e)	No	Req.
Wesley Memorial Hospital	Chicago	yes	yes	yes	yes	yes	275	No	18	Ap.	18	(1-f)	No	None
West Side Hospital	Chicago	yes	yes	yes	yes	yes	197	No.	6	Ap.	12	Jan. & July	No	Req.
Decatur and Macon County Hospital	Decatur	yes	yes	25	yes	yes	165	(26)	3	Ap.	12	July	$25	Op.
St. Mary's Hospital	E. St. Louis	125	84	26	25	..	260	No	4	Ap.	12	July	$25(k)	None
Evanston Hospital	Evanston	95	36	36	39	65	271	No	12	Ap.	12	(1-c)	No	Req.
St. Francis Hospital	Evanston	yes	yes	81	44	40	370	No	8	Ap.	12	(1-c)	$25	None
U. S. Naval Hospital	Great Lakes	160	385	..	..	400	975	(27)	6	Both	12	June	(b)	Req.
St. Joseph's Hospital	Joliet	80	56	44	12	..	192	No	2	Ap.	12	July	$50	None
Oak Park Hospital	Oak Park	50	35	35	10	45	175	No	5	Ap.	12	July	$10	None
West Suburban Hospital	Oak Park	170	43	94	20	100	427	No	12	Ap.	12	July & Oct.	No	Req.
Rockford Hospital	Rockford	yes	yes	18	9	..	110	No	2	Ap.	12	Jan. & July	$50	None
St. Anthony's Hospital	Rock Island	70	47	20	10	3	150	No	2	Ap.	12	June & Sept.	$35	Op.

REPORT OF THE WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

Though relatively few could attend, yet all our Auxiliary women everywhere are interested in our recent convention, the 9th Annual meeting of the Woman's Auxiliary of the American Medical Association, in Philadelphia.

The convention attendance was the largest in the history of the organization. More than 1,400 delegates, members and guests were present.

Activities began Monday, June 8, with a luncheon in honor of the National President, followed by three round-table conferences. These were as follows:

1. Programs for County Auxiliary Meetings.
2. The Technique and Value of a Committee on Public Relations.
3. History and Archives.

The Convention proper was officially opened by the President, Mrs. J. Newton Hunsberger, at 9 A. M., Tuesday, June 9. Besides much other business, all standing committees reported at this meeting. These were: Organization, Program, Finance, Legislation,

Public Relations, Hygeia, Revision, Press and Publicity Printing. It is of interest to know we have over 12000 paid-up members. Income the past year was $5,338.13 and expenses to April 1 were $3,087.69.

The program of the Wednesday session embraced as its outstanding features the report of State Presidents, and the election and introduction of new officers.

The post-convention Board meeting was held Thursday morning and was presided over by the newly installed President, Mrs. A. B. McGlothlan, who outlined her policies for the coming year and announced her committee appointments. Two features of this meeting gave interesting and helpful results. These were responses to the topic "What have I gotten out of this Convention?" and the discussion incident to opening "A question and suggestion box."

Not only Pennsylvania but New Jersey and Delaware Assisted in the entertainment provided for this convention. Trips to historic and other points of interest, teas, luncheons and receptions showed the hospitality and resourcefulness of the splendid Convention Committee.

Next year the convention will be in New Orleans in April. Plan now to attend that meeting.

NEWS ITEMS FROM COUNTY AUXILIARIES

Coles Cumberland County. One of the prettiest summer parties this season was given in July at the home of Dr. and Mrs. R. H. Craig in Charleston, with the husbands as guests of the Auxiliary. A picnic dinner was served on small tables, arranged in the attractive flower garden of the Craig home. There were members present from Mattoon, Charleston, Neoga, Toledo and Greenup, including Dr. and Mrs. T. O. Freeman, the latter our State President.

Cook County. The first meeting of the season was held October 7 at the Medical and Dental Arts Club. Dr. John R. Harger was guest speaker. Past Presidents of the Woman's Auxiliary to the Chicago Medical Society were guests of honor.

Douglas County. During June the Douglas County Medical Association and members of the ladies auxiliary held their annual picnic at Patterson Springs. Dr. Frederick B. Balmer of Northwestern Medical University gave the principal address.

Randolph County. The September meeting of the Randolph County Auxiliary was held in conjunction with the Medical Society at Chester, Illinois, September 10. The auxiliary held their luncheon at the Hotel Royal. After the business session they were taken to the prison and shown the points of interest and through the prison hospital, after which they were entertained by Mrs. C. C. Rowley, Mrs. C. O. Boynton, president of the auxiliary was present, and in charge of the meeting.

Vermilion County. This auxiliary entertained their doctor-husbands at a buffet supper June 2 at the Soldier's Home. Mrs. S. M. Hubbard, the president, gave full report of state meeting at East St. Louis, followed by general discussion of the purposes and plans of the auxiliary for the ensuing year.

At their October 6 meeting an unusual program of educational interest followed through the "Review of Hygeia" by Mrs. O. J. Michael. A paper on "Smallpox" endorsed by the Illinois State Medical Society was presented by Mrs. D. C. Good and discussed by the members. A questionnaire on "Contagious Diseases" was prepared and all present participated.

MRS. F. P. HAMMOND,
Press and Publicity Chairman.

AMERICAN BOARD OF OTOLARYNGOLOGY

An examination was held in Indianapolis, Indiana, September 12, 1931, just prior to the meeting of the American Academy of Ophthalmology and Otolaryngology held in French Lick, Indiana. Forty-three candidates were examined, of which nine were conditioned or failed.

The Board will hold an examination in New Orleans on May 9, during the meeting of the American Medical Association, and in Montreal, next fall, just prior to the session of the American Academy of Ophthalmology and Otolaryngology.

Prospective applicants for certificates, should address the Secretary, Dr. W. P. Wherry, 1500 Medical Arts Building, Omaha, Nebraska, for proper application blanks.

W. P. WHERRY, M. D.,
Secretary-Treasurer.
H. P. MOSHER, M. D.,
President.

TULAREMIA FROM OPOSSUM

The case history of a patient at Beecher City, Illinois, indicates that the individual got tularemia from an opossum which she dressed. This information appears in the records of the Chicago branch diagnostic laboratory of the State Department of Public Health. A specimen of blood from the patient which proved positive for tularemia was examined at the laboratory.

PLASTIC OPERATION TO RESTORE VOLUNTARY ANAL CONTROL

Harvey B. Stone, Baltimore (*Journal A. M. A.*, Oct. 24, 1931), reports and reviews seven further cases of anal plastic operations together with four previously recorded cases, with nine good and two poor results. A further modification of the method to secure better protection against infection is described. The operation depends on the utilization of the gluteus muscles. Hence it is obvious that if these muscles are for any reason not functioning this operation cannot be expected to succeed. Also until the patient learns to use the glutei properly the full benefit is not obtained. Hence education of the patient in this regard is important. He must be trained to contract the buttocks when necessary. It follows that patients who cannot be taught to do this, because of lack of interest or of intelligence, do not improve as much as others. One case of the author's series was an instance in point. The anatomic and surgical result was excellent, but the patient did not

always remember to use his new power of anal control. Because of this necessity for education, the successful cases do not show as much immediate improvement as will ensue ultimately.

PROSTATIC OBSTRUCTION: ELECTRO-CARDIOGRAPHIC STUDY OF THREE HUNDRED AND TWENTY-ONE CASES

In a study of 321 cases of prostatic obstruction Charles M. Bacon, Herman L. Kretschmer, Chicago, and Lewis W. Woodruff, Joliet, Ill. (*Journal A. M. A.*, Oct. 24, 1931), demonstrated the frequency of myocardial disease. There were 35.8 per cent with heart disease in the group of all ages. The frequency of left axis deviation and myocardial disease in relation to age showed a progressive increase in these conditions with advancing years. Of a total of 115 with heart disease, 90, or 78 per cent, showed abnormal electrocardiograms. Emphasis is laid on the pre-operative and postoperative care and choice of anesthetic in patients with cardiac disease. Four postoperative deaths due to heart disease are analyzed. A series of forty-seven patients returning some time after operation showed in general considerable improvement in cardiac function as a result of the relief obtained by surgery. From their electrocardiographic study the authors are convinced of the value of recognizing preoperatively the presence of cardiac disease in patients with prostatic obstruction irrespective of clinical cardiac signs. The electrocardiogram is, however, an aid, not the final criterion, in the diagnosis of myocardial disease.

THE OATH OF HIPPOCRATES

I swear by Apollo, the physician, and Aesculapius, and Health, and All-Heal, and all the Gods and Goddesses, that, according to my ability and judgment, I will keep this oath and stipulation: To reckon him who taught me this art equally dear to me as my parents, to share my substance with him and relieve his necessities if required; To regard his offspring as on the same footing with my own brothers, and to teach them this art if they should wish to learn it, without fee or stipulation, and that by precept, lecture and every other mode of instruction, I will impart a knowledge of the art to my own sons and to those of my teachers, and to disciples bound by a stipulation and oath, according to the law of medicine, but to none others.

I will follow that method of treatment, which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one if asked, nor suggest any such counsel; furthermore, I will not give to a woman an instrument to produce abortion.

With purity and with holiness I will pass my life and practice my art. I will not cut a person who is suffering with a stone, but will leave this to be done by practitioners of this work. Into whatever houses I enter I will go into them for the benefit of the sick, and will abstain from every voluntary art of mischief and corruption; and further from the seduction of females, or males, bond or free.

Whatever, in connection with my professional practice, or not in connection with it, I may see or hear in the lives of men which ought not to be spoken abroad, I will not divulge, as reckoning that all such should be kept secret.

While I continue to keep this oath unviolated, may be granted to me to enjoy life and the practice of the art, respected by all men at all times, but should I trespass and violate this oath, may the reverse be my lot.

TREATMENT OF POLIOMYELITIS

John Ruhräh, Baltimore (*Journal A. M. A.*, Oct. 24, 1931), summarizes the treatment of poliomyelitis thus: The early treatment should be by the injection of convalescent serum or that taken from patients who at some time have had the disease. Stocks of this serum should be kept on hand by health departments, hospitals and similar institutions. Divided into proper doses, placed in small bottles and dried, it keeps practically indefinitely, and all that is needed is to add sterile water to it to make up the required amount. During the febrile period all efforts at treatment should aim to make the patient as comfortable as possible, using the technic which would be applied to any acute infection. Rest is essential and the late results are best when that is insisted on, whether the case is mild or severe. The patient should be kept in bed as long as there is pain, but during this period it may be advisable to lift him to another bed or comfortable chair while the bed is aired or made. This change is often most grateful to the patient and if it can be done without undue pain or fatigue apparently does no harm. When the legs are affected the patient should be kept either in or on the bed for at least six months and longer in many cases. The treatment of poliomyelitis after the febrile period consists in rest, relief of pain, prevention of deformity, massage and exercise, which may be passive, assisted, voluntary, carried out under water, but always supervised. Failure to prevent deformities due to contraction of the muscles, tendons and fasciae is the greatest sin of omission. The contractions take place very quickly; a week or ten days' neglect may result in a foot drop which may cost the patient much pain and the physician much trouble. No patient with extensive paralysis escapes without contractions, but they should be kept at a minimum by care and treatment. If they occur they should be treated as early as severe pain permits.

SMALLPOX THROUGHOUT THE WORLD

Reports from the League of Nations show that India alone recorded more cases of smallpox during the first half of 1931 than did the United States. From India 63,376 cases were reported against 22,184 from the United States. England and Wales stood third on the list with 4,412 reported cases. No cases were reported from Scotland, Germany, Italy, Netherlands, Switzerland, Philippine Islands and Lithuania.

Illinois contributed 1194 cases toward the aggregate prevalence in the United States.

Original Articles

THE PUBLIC HEALTH ASPECTS OF ARTIFICIAL PNEUMOTHORAX THERAPY*

ALLAN J. HRUBY, M. D.
CHICAGO

It is only within comparatively recent times that we are coming to appreciate the importance of pneumothorax therapy in public health work. In fact, pneumothorax, in itself, is a comparatively modern procedure.

History. Carson, in 1823, was the first to mention the therapy of artificial pulmonary collapse. To Forlanini of Pavia, Italy, however, goes the credit of having first introduced artificial pneumothorax as a practical method of treatment. He performed his first operation in 1888 and reported his first cases in 1894 and 1895.

In 1898 Dr. J. B. Murphy, independent of Forlanini, introduced pneumothorax treatment in five cases. In the same year Dr. Frederick Tice, President of the Board of Directors of our institution, administered pneumothorax therapy to patients at the old Dunning tuberculosis institution. Owing to the fact that the street cars on Irving Park Boulevard at that time did not run within a couple of miles of Dunning, it was necessary for the patients, after their gas injections, to walk or ride a bicycle this distance of a couple of miles to the cars.

In Chicago as elsewhere, notwithstanding the early work of Doctors Murphy, Tice and others, the procedure of pneumothorax did not gain as wide an acceptance as it merited. As late as 1920, of the 2,461 patients dismissed from the Municipal Tuberculosis Sanitarium in the course of the year, only two had received pneumothorax therapy. Today, in our pneumothorax clinic alone we are treating thirty-six patients. This clinic, operating in connection with our dispensaries, was established in May, 1929, and to date sixty patients have received 607 treatments. There are two four-hour sessions a week, and, on the average, five patients are treated. The dispensary is equipped with an x-ray and fluoroscope and the physician in charge has had long training in the work.

*Read before the Alumni Clinic, University of Illinois, June 12, 1931.

The Private Practitioner and Pneumothorax. The average physician is not personally interested in the application of pneumothorax. He has not the time and, frequently, has not the inclination to busy himself with the minute technicalities involved. In many instances his patient can not afford a specialist's fee.

Observation Time. Even the physician interested in pneumothorax work, who decides to administer his own treatments, finds himself sooner or later in considerable difficulty. The observation time necessary is not to be counted in weeks or months; it must be counted in years and the physician who engages in pneumothorax work must realize that continued supervision of the individual patient over a series of years is necessary.

Expense. The expense involved in continued pneumothorax therapy over a prolonged period is prohibitive for many individuals of the wage-earning class. The chronicity of tuberculosis and the continued drain reduces the economic condition of the patient and his family to a level at which they cannot afford large additional expenses.

Dangers. Irrespective of duration and expense there are certain dangers incident to the private management of pneumothorax patients which must be considered. The private physician, even when absolutely conscientious and worthy, may find it difficult to retain management of his patient. The patient may become dissatisfied and discontinue treatment. The dangers incident to this action on the part of the patient need not be discussed here.

Furthermore, certain difficulties may arise with which the private practitioner may find it difficult to cope. Complications, as effusion, pyopneumothorax, collapse, emphysema, and perforation of the lung may cause considerable worry to the practicing physician. A death occurring during gas administration in the doctor's office is more difficult to explain than a death occurring in a clinic or sanatorium. The doctor in his office may have used faultless technic and skill; nevertheless, notwithstanding his proficiency in the work, he may be subjected to severe censure and worry.

The Pneumothorax Program in the Field as a Boon to the Practicing Physician. From what we have said it is obvious that the expansion of a pneumothorax clinic in the field is a boon to

the practicing physician. We contemplate in the near future a considerable development of our pneumothorax clinic facilities. We propose, in our expanded program, to make the application of pneumothorax available to any physician whose patient is not in an economic position to pay a specialist's fee. It is our plan that the physician with a patient needing pneumothorax may, at any time, call on our pneumothorax clinic for consultation and advice, free of charge. He may personally bring in his patient and assist at the operation; he may, on the other hand, in cases in which such procedure is indicated, request that the pneumothorax treatment be administered in the home. It will be our aim to broadcast amongst the profession the advantages of lung compression, to encourage the physician to seek out cases suitable for such treatment, and to offer the private physician every cooperation and courtesy in the management of his case.

No attempt will be made to interfere in any way with the routine of practicing physicians or the program of other institutions. We believe that the routine of pneumothorax application should be continuous, should be administered during its entire course by the same individual or by the same institution. Consequently, it will be our aim in the case of patients who have been treated by physicians or other institutions, to refer back such patients when they need refills, to the physician or agency who initiated the pneumothorax procedure.

General Application of Pneumothorax as a Public Health Measure. We wish to stress particularly the role of pneumothorax therapy as a public health measure. In the past we have been inclined to stress pneumothorax treatment, applied by a large institution, as a definitely sanatorium procedure. The tendency was to keep the patient in residence in the sanatorium for comparatively long periods of time. The patient, when finally discharged was, as a rule, instructed to return to the sanatorium for refills.

The tendency today is toward more rapid turnover of sanatorium patients, toward an acceleration of the tempo in sanatorium routine. From the public health standpoint, a brief sanatorium stay for the many is, in every sense, more desirable than a prolonged sanatorium residence for the few. In an effort to reach this objective, the tendency today is toward the extension of sanatorium routine into the home and as a first step in this direction, the expansion of the pneumothorax program is especially desirable.

Three-fold Advantage. The advantages of a pneumothorax program in the field, from the public health standpoint, are three-fold and may be classified under the following heads:

A—Education.

B—Economics.

C—Control of infection.

Education. The application of pneumothorax therapy will make sanatorium education available to a much greater number of patients. The importance of even a brief period of sanatorium education is fully realized by the practicing physician.

Economics. From the point of view of economics, the establishment of a pneumothorax clinic is a sound public health measure. The patient who occupies a bed in a sanatorium at a per capita cost of $15.00 to $20.00 a week, may be treated acceptably in his home at an annual cost of a few dollars. The field or dispensary staff is paid on an annual basis and can be trained to undertake the new duties without additional expense.

From the economic standpoint, for instance, we have in Chicago at the present time a very disturbing problem. Our Sanitarium has a capacity of 1,125 beds and every bed is taken. In addition, there is a waiting list of four hundred. It is manifestly impossible in this community or in any other community, to provide sanatorium or hospital accommodations for all the victims of tuberculosis who need such accommodations.

According to the Framingham experiment, there are in the community nine cases of tuberculosis for each death. These figures would indicate, and we consider it a low estimate, that there are approximately 22,000 cases of tuberculosis in Chicago. On the other hand, we have in Chicago, sanatorium and hospital bed accommodations for only 1,567 patients. We can never hope to finance a building program which will house such a number of tuberculous individuals. Consequently, we must stress rapid sanatorium and hospital turnover, must accelerate the tempo of sanatorium routine, and must emphasize the necessity of taking the sanatorium program, including pneumothorax, into the home.

As a further indication of the necessity of shortening the sanatorium stay, I may say that at the present time we have twenty-six open cases

of tuberculosis who are unwillingly in contact with children. These cases are quite willing and ready to go to our Sanitarium, the Cook County Hospital, or Oak Forest. Even for these patients, who may be considered emergency cases, no beds can be found and they are obliged to remain in contact with children, undoubtedly endangering the lives of the latter and helping to spread tuberculous infection. Lawrason Brown and John Hayes state the economic argument is strongly in favor of beginning the treatment earlier in the course of the disease, after a shorter period of observation.

Control of Infection. The application of pneumothorax in the ideal case eliminates bacilli from the sputum. In many cases, owing to adhesions and other local conditions, a complete compression can not be obtained and the sputum may remain positive. In the majority of instances, however, pneumothorax as well as exercising a most beneficial influence on the course of the disease, converts the positive into a negative case.

The importance of this change, from the public health standpoint, can not be overestimated. The dissemination of infection in the community will vary, of course, directly with the number of open cases. A marked decrease in open cases engendered by a widespread pneumothorax program of necessity must decrease the incidence of tuberculous infection.

A few figures will illustrate. In a series of 96 cases subjected to pneumothorax and carefully studied at the Sanitarium, 61 previously with positive sputum became negative. Of the remainder, 22 cases had to be abandoned on account of adhesions or other complications. Consequently, in only 13 cases which were in a condition to receive adequate treatment did the sputum remain positive.

In a total of 47 cases treated in the dispensary, 25 cases, at the inception of the treatment, were positive. Of these, 19 became negative as the pneumothorax treatment progressed. Consequently, including the Sanitarium and the dispensary series, we have a series of 80 cases who were, as it were, neutralized as sources of infection.

The control of positive sputum cases by pneumothorax is, of course, much more efficient than any other possible means of control or isolation that may be devised. It is a mechanical control not dependent on the cooperation of the patient. Even the well-trained consumptive, notwithstanding his intentions and training, may be and frequently is dangerous. He covers his mouth a fraction of a second too late after the cough. The bacilli are disseminated and may possibly cause infection.

The inauguration, then, of a widespread pneumothorax program devised to reach large numbers of tuberculous individuals throughout the community must be regarded as an extremely efficient public health measure.

Phrenicoexeresis and Thoracoplasty. As well as pneumothorax, phrenicoexeresis and thoracoplasty may, and indeed from a certain standpoint, must be considered as public health measures. In the same way as pneumothorax, these procedures tend to shorten sanatorium stay and tend, also, to decrease the incidence of positive cases in the community.

Indications for Pneumothorax. As the object of this paper is to stress, particularly, the public health aspects of pneumothorax and the allied procedures, I will not go into fine detail concerning indications.

Forlanini, when he first described his technic, insisted that treatment be used only in far-advanced cases after everything else had been tried and also insisted that the lesions must be strictly unilateral. As we all know, these indications today have widened very considerably. We do not, today, insist on a perfectly good, contralateral lung nor do we stress the administration of pneumothorax as a final measure after other measures have failed.

Briefly, cases suitable for pneumothorax therapy may be divided into four classes:

1. Hemorrhage cases, otherwise uncontrollable.

2. Unilateral cases with good compensatory contralateral lung. It is the acute and progressive form of disease in which artificial pneumothorax has its best indications.

3. Bilateral cases in which cough and serious toxemic symptoms may be relieved by partial collapse of one lung or even of both lungs.

4. Young persons, in whom activity occurs, provided it is unilateral.

Percentage of Cases Suitable for Treatment. This, of course, is a difficult problem to answer as no two series of cases studied may be similar in all respects. Figures obtained from the experience of various authors indicate the percentage

of cases suitable as ranging between five and ten per cent.

At our Sanitarium at the present time we have 62 cases under treatment. The number of cases fluctuates, of course, from time to time. I believe however, that the percentage of cases found suitable for pneumothorax in our Sanitarium ranges around 12 per cent.

Contraindications. As contraindications, I may mention briefly—acute miliary tuberculosis, diseases of the heart and kidneys and diabetes; also tuberculous disease at the base of the better lung and definitely acute disease in any part of the lung; also asthma and emphysema.

Technic. As with indications, I can only hope in a paper of this scope to explain briefly some considerations in technic. We must stress, in the first place, that pneumothorax, while it appears as a comparatively simple procedure, should not be considered lightly. Strict asepsis must be followed and novocain or butyn solution of one-half per cent. used as a local anesthetic. When possible, the mid-axillary line in the sixth or seventh interspace is selected because the chances of entering are better. It is our practice to give a small amount of gas, from 200 to 350 cc., depending, of course, on the amount of free pleural space available. These treatments are repeated p.r.n., and it is advisable to finish with slightly negative or neutral intrapleural pressure. In the presence of adhesions, higher pressure is indicated.

The principles in technic may be summarized as follows:

1. Avoid sudden change in the intrathoracic equilibrium and in the relative position of the intrathoracic viscera.

2. Avoid high pressure in the presence of a flexible mediastinum.

3. Aim gradually but definitely to increase positive intrapleural pressure in cases in which pleural obliteration is threatened.

4. Determine in each individual case the pressure required.

If the pleural space is found to be free and air is allowed to flow, the manometer should be consulted at each 50 c.c. of air given. A small, initial dose should be given. J. B. Murphy advised giving large doses—3,000 c.c., while Forlanini gave 200 to 300 c.c. Clinical observations seem to favor the latter procedure. In low pressure installations, no displacement of the mediastinum or heart occurs and effusions are not as likely to result.

Refills—Frequency and Amounts. After the initial inflation, the next few treatments should be given every third or fourth day. The amount of gas given must not be too large and must diminish as the lung tends toward complete collapse. Success or failure depends very largely on the correct spacing of the intervals between refills and on maintaining the correct degree of collapse. Individualization is the keynote of success.

Complications. Concerning complications, again speaking briefly, I may mention pleural shock and air embolism. These disturbing phenomena are comparatively rare. In more than 6,000 inflations which we have given, there has been but one case of air embolism. Pleural effusion is a common and rather serious complication; pyothorax, of course, is more serious still.

The possibility of reactivation of the contralateral lung must be kept in mind. During the treatments, in order to detect the onset of complications as well as to observe the effect of the gas, frequent x-ray and fluoroscopic examinations are essential. Spontaneous pneumothorax, emphysema, and perforation of the lung are less frequent complications.

Results. In a series of pneumothorax treatments at the Sanitarium, extending over a period of four years, we found that approximately 24 per cent. were discharged as arrested. Many of these are working today. Twenty-one per cent. were improved; the remaining 55 per cent. are still under treatment.

Duration. It is better to continue too long than to fall into the routine of allowing re-expansion to occur too soon. Doubtless the best results are obtained when a collapse is carried on over a period of from two to five years, depending on the individual case.

PHRENICOEXERESIS

Phrenicoexeresis aims at the same objective as pneumothorax, namely pulmonary rest, and has the same public health relationship. The diaphragm, one of the major muscles of respiration, is probably permanently paralyzed following phrenicoexeresis. With the rising of the paralyzed diaphragm, the capacity of the thorax on the side operated on is decreased and, consequently, there is a definite collapse of the lung

structure on that side. The average rise of the diaphragm is probably 4 cm., and the reduction in vital capacity 25 to 30 per cent.

A total of 209 cases of phrenicoexeresis have been done at our Sanitarium, with the following results:

	Improved	Unchanged	Worse
186 Phrenicoexereses.....	115	45	26 (17 dead)
23 Phrenicoexereses and Thoracoplasty	18	1	4 (dead)
	133	46	30

In other words, 64 per cent. of those operated on improved, 22 per cent, remained unchanged, and 14 per cent. became worse or died.

THORACOPLASTY

The last measure in our triad of pulmonary surgical procedures is thoracoplasty. It is also last in the order of application and should be tried only when other methods of treatment have been tried and found wanting.

Again, as in the case of pneumothorax and phrenicoexeresis, thoracoplasty has a definite public health relationship. Thoracoplastic procedure will release the patient from the sanatorium in a shorter time, will tend to decrease the incidence of open cases in the community and will, of course, benefit the individual case, saving many patients formerly considered hopeless.

As to the technic, indications and contraindications in thoracoplasty, Dr. Hedblom of our consulting staff has written a splendid article on this subject which was published in our January-February, 1929, *Bulletin*.

In a series of 68 cases reported on at our Sanitarium during the past six years, there were only three deaths within three weeks following the operation, giving an operative mortality of 4.4 per cent. by patients and 1.3 per cent. by operation. Of the sixty who survived, two were not improved. All the remaining patients were improved in varying degrees, approximating a complete symptomatic cure.

SUMMARY

Pneumothorax and the allied surgical procedures—phrenicoexeresis and thoracoplasty—are desirable not only from the standpoint of the individual patient but also from the standpoint of public health. Such procedures tend to shorten the period of sanatorium residence, to diminish the incidence of open cases in the community and to make practical the treatment of a larger number of cases in the home.

A field or dispensary program of pneumothorax treatment is a practical public health step and will bring the advantages of pneumothorax treatment to a large circle of patients who are now denied this mode of therapy.

The dispensary pneumothorax program will make it possible for the practicing physician to give such of his patients as cannot afford a specialist's fee, the advantages of pulmonary collapse.

The indications for pneumothorax have widened considerably in recent years and it is no longer a final measure after everything else has been tried.

The dispensary program of pneumothorax will widen further the indications and bring to the attention of physicians many cases which may be suitably treated by gas inflations.

In the search for cases suitable for pneumothorax many cases suitable for phrenicoexeresis and thoracoplasty undoubtedly will be uncovered and receive proper treatment.

1130 North Lorel Avenue.

THE DUALITY OF DIABETES MELLITUS AND PULMONARY TUBERCULOSIS

JOHN RITTER, M.D.

Assistant Professor Emeritus of Medicine, Rush Medical College, the University of Chicago

MIAMI, FLORIDA

Diabetes mellitus, as a symptom complex, was very early recognized by the medical profession. In those early days the method of treatment was chiefly symptomatic; mostly empirical, and with the giving of anodynes, usually codein, and the control of the intake of sugar, the instituting of an anti-diabetic diet generally limiting the carbohydrate and fat intake proportionately, much good was accomplished.

Later, the Allen treatment and that of Joslin, with the regulation of the giving of carbohydrates, fats and proteins, in estimated amounts in each individual case, with perhaps a strict diet lasting from one to four or five days was used and a great step forward was achieved in the treatment of this disease. But, with the introduction of the hormone, insulin, about a decade ago, the only true, rational method for con-

trolling diabetes was given to the medical profession.

As to the number of people afflicted with diabetes mellitus, views differ greatly. From various sources it was estimated that this number throughout our country may approximate the million mark, and that in a small number of the above mentioned cases there exists also a dualistic state—a diabetes mellitus accompanied by an existing pulmonary tuberculosis, and the number of people who are suffering from both these diseases is also variously estimated from 0.5, 1.3 to 2%. However, the average may be close to 1.6% or 16,000 cases. This number, however, is of such tremendous significance that it should receive our most serious consideration.

The incidence and prevalence of these two diseases, diabetes and pulmonary tuberculosis, in this dual role, in one and the same individual, have not received the necessary attention, have not been sufficiently emphasized by phthisiotherapeutists, and although quite a few papers and manuscripts are offered by internists, by clinicians, comparatively few by specialists who are doing intensive tuberculosis work.

From the first assembly of tuberculosis workers in Washington, in 1905, after the organization of the National Tuberculosis Association, up to and including the meeting of 1931, covering a period of twenty-seven years, 1,381 papers were read and discussed at these various gatherings, and during all these years only three papers were offered before this body of tuberculosis specialists, in which diabetes was considered as a concomitant symptom. These three papers were read at the meetings of 1918, 1922 and 1923, and in the discussion of these papers the pulmonary disorder received the most consideration. Equally important, from this viewpoint, was the meeting of the International Congress on Tuberculosis at Washington in 1908, where 284 papers were presented by different lung specialists from the various parts of the civilized world—when not a single paper was offered, or was consideration given to this dualistic syndrome—diabetes and tuberculosis.

Sansum[3] (1923) in his report of patients under his care who had both diabetes mellitus and pulmonary tuberculosis, covers more the diabetic aspect than the pulmonary. In this paper here we are more concerned with the pulmonary disorders; hence we only allude to the mentioned facts, that he observed the duality in three patients who came under his observation. He briefly reports, however, his pulmonary findings, and gives implicit direction how the diabetic patient should be taken care of under insulin, a strict diet and general treatment.

It does appear strange that two diseases with such diversity of causes should become associated.

The diabetic is usually over weight, obese, has a good appetite and digestion, is fond of overeating, not fond of much exercise, is indolent, but as the disease progresses, it leads ultimately, as in pulmonary tuberculosis, to loss in body weight, weakness and death. And yet, with this diverging apparently diametrically opposed condition, the two diseases may be found in one and the same individual, associated. Then the question arises—which disease was first manifested in the patient? However conjectural this may be, the opinion of workers in tuberculosis is that the diabetic disturbance was primary. The great difference in the general appearance of the two diseases in two different individuals has often been mentioned, as if in direct opposition, and still the two diseases are often found associated.

Tuberculosis usually develops in the undernourished, in those suffering from gastric disturbances, impairment of diet, indigestion, loss of appetite, becoming easily fatigued, a more or less tired feeling, underweight, or a progressive loss in weight. However, in the patient suffering from progressive diabetes mellitus, many of the above mentioned symptoms may be observed, giving the picture of a tuberculous disease, but this may then be leading to a wrong diagnosis.

Diabetes occurs most frequently in middle life; rarely in both extremes. The disease in early life usually leads to diabetic coma, to greater fatality or early speedy death, late in life, to a slower process, due to increased resistance, and still later in life, ultimately to exhaustion, cardiac degeneration, gangrene, etc.

The association of the two diseases presents a particularly vicious condition.

THE FREQUENCY OF PULMONARY TUBERCULOSIS IN THE DIABETIC

Montgomery[1] (1918) recorded that in 111 cases of diabetes collected from the Philadelphia

Hospital records, nine had active pulmonary tuberculosis as an accompaniment, and one tuberculosis of the adrenals. Out of 51 non-fatal cases of diabetes none had active pulmonary tuberculosis, but out of 60 fatal cases of diabetes the above mentioned 9 cases of pulmonary, and the one case of adrenal tuberculosis, were found at autopsy, and out of 35 fatal but non-autopsied diabetic cases, three had active pulmonary tuberculosis; out of 25 autopsied cases of diabetes 6 showed active pulmonary tuberculosis. Out of 355 autopsies collected from the literature since 1882, and up to 1918, when Montgomery made this observation, including his 25 cases, a total of 138 or 38.9% revealed pulmonary tuberculosis, mostly the active form.

The bulletin of the Mayo clinic, Wilder and Adams, in 5,500 cases of diabetes, found the incidence of pulmonary tuberculosis approximately 1.6%.

E. P. Joslin,[6] in 3,000 cases found 43—about 14 in 1,000, or 1.4%.

Reginald Fitz,[4] Peter Bent Brigham Hospital, Boston, 1,529 cases diabetes. Both diseases were present in 35, or 23 per 1,000, or 2.3%.

Arthur P. Derby,[a] Herman Kiefer Hospital, Detroit, reports, in a personal communication, that out of a total of 1,081 cases of pulmonary tuberculosis diabetes was present in 11, which is an incidence of about 1%. This carries a period of about 18 months, namely: from January 1, 1929 to July 1, 1930.

From the records of the Detroit Tuberculosis Sanatorium,[d] we can estimate that the incidence of diabetes in the tuberculous is about 1%.

The Chicago Fresh Air Hospital,[e] after a careful examination of its records, gives the estimate as 1.33%.

According to Montgomery, tuberculosis did not occur more frequently in diabetes than in the general population at the same age period.

THE INCIDENCE OF DIABETES MELLITUS WHEN PULMONARY TUBERCULOSIS IS THE PRIMARY DISORDER

It is frequently observed that in a diabetic patient with a progressive tendency, who has been under observation for some time, a beginning pulmonary tuberculosis becomes manifest. It will also be of interest to observe, if a patient suffering from pulmonary tuberculosis, active and progressive, has a diabetic disturbance. The general belief now upheld is that diabetes in an individual is the primary disorder. That in a person who for some time has had a healed lesion, the diabetes lowers the resistance; this may then lead to a reactivation of the supposedly healed or latent tuberculous process, and autoinfection or a reinfection from within take place, or that by lessening the vitality the immunity is lowered, and by the presence of the diabetes tubercle bacilli may gain entrance from without; causing a reinfection producing now an active tuberculous process in the diabetic individual.

Pulmonary tuberculosis, followed by diabetes, is considered comparatively infrequent. Out of 31,834 cases of pulmonary tuberculosis collected from 25 tuberculosis sanatoria in various parts of the United States, 101 cases of glycosuria, approximately ⅓ or 1%, and 51 cases of diabetes (nearly ⅙ of 1%) were reported, but some of these cases of glycosuria were undoubtedly diabetic.

The autopsy statistics are also greatly at variance. While the Henry Phipps Institute reports 1 diabetic in 479 pulmonary cases, the Jefferson Hospital, Philadelphia, reports a much greater number (more than four times the number) namely: 1 diabetic in 110 cases of pulmonary tuberculosis.

Lawrason Brown, Trudeau Sanatorium, mentions a case that developed a diabetes while under his observation and care at the sanatorium for pulmonary tuberculosis. To this we may add a case observed at the Jackson Memorial Hospital, in which a patient in the tuberculosis ward, after being a patient for some years, suddenly developed a concomitant disorder, a diabetes mellitus. This was the only case observed out of a total of 150 cases of pulmonary tuberculosis.

The early observations on the association of diabetes and tuberculosis. Morton (1694),[10] "Yea, when I consider with myself how often in one year there is cause enough ministered for producing these swellings, even to those that are wont to observe the strictest rules of living, I can not sufficiently admire that any one at least after he came to the flower of youth, can die without a touch of consumption." From this we must conclude that as a keen observer, he noticed at that early period what we teach today, namely: that nearly every one, when he reaches maturity,

has a little tuberculous infection, and perhaps disease as well. Full credit should also be given him for being one of the first, in those early days of medical observation, for drawing the attention of the physicians of that time, in a report in this same monograph, on pulmonary tuberculosis being complicated with diabetes.

Credit should be given to Greisinger for reporting that first large group of patients who had both tuberculosis and diabetes. He reported 250 cases in 1858.

Windle, in 1883, reporting on 333 autopsies on diabetic patients, states that he frequently found pulmonary tuberculosis an associated disorder.

In the publications of the Universities of Paris, several theses appeared on this dual disease—tuberculosis and diabetes, by Bertail, 1873, Bagan, 1888, Sauvage, 1895.

The sugar in the blood of the normal and the diabetic individual. Normal blood sugar,[7] 0.09 to 0.12 or 1 in 1,000, or 1/10 of 1%—approximately 0.1 in 100. Blood drawn in the morning, after 14 hours fasting, if 0.15% is considered pathologic. To be reliable, the blood must be drawn in the morning, 12 to 14 hours after a fast, to ascertain what influence a dietary treatment has on the blood picture. Normal 100 Mgs. per 100 CC. at the height of digestion, 0.15 to 0.17%. If large quantities of carbohydrates have been given, glucose may pass out in the urine, and during absorption of carbohydrate occurs a slight rise in the glucose content of the blood; during fasting it will be lowered to about 0.1%, and in mild diabetic cases a blood sugar value of 140 to 300 Mgs. per 100 CC.; in severe cases as high as 1,200 Mgs. per 100 CC. is observed. Too much reliance should not be placed on a urine analysis for sugar in the diabetic; in early or mild cases, 160 to 170 Mgs. to 100 CC. of blood. Attention should be directed to the hyperglycemia in the diabetic, and as the disease advances the glycosuria becomes less and less, a safe criterion; the permeability of the kidneys for sugar becoming less and less, being lowered ultimately so that no sugar appears in the urine. The treatment for blood sugar tolerance may then be raised in quantity so that the blood may contain 160 to 180 Mgs. in 100 CC., when sugar may be found in the urine.

A given quantity of carbohydrate yields in the body 100% of glucose—no fatty acid. Protein yields 58% glucose and 46% fatty acid, and fat yields 10% glucose and 90% fatty acid, and the ratio of fatty acid to glucose must not exceed the proportion of 1.5 to 1.

According to some authorities, in some cases of acidosis the CO_2 determination of the blood is more reliable than the urinary findings. Cholesterol, in physical properties resembling the fats, is found in the blood in normal amounts, as 0.15%, is increased in diabetes with acidosis. Hence, in the diabetic, with ketosis, a blood determination for cholesterol should be attempted, even if diabetes is accompanied by pulmonary tuberculosis, in which instance the cholesterol of the blood is usually deficient. Many clinicians pay much attention to the cholesterol estimation in this dual disease.

Hemoptysis in diabetes mellitus and pulmonary tuberculosis. As to the presence, frequency or infrequency, of this syndrome views also vary greatly and, whereas, one clinician states it to be relatively rare, another with equal experience maintains that it is a frequent occurrence. The occurrence of this alarming symptom is of sufficient frequency to demand serious consideration. Landis[1] and his associates (1918) state that in twelve cases, 10 males and 2 females, that came under their observation, the incidence of hemoptysis was 11 times observed, and in his second report (1922) Landis[2] mentions this incidence, and gives the history of 3 patients who had both diabetes and tuberculosis, and the symptom of hemoptysis was observed in only 1, aged 51. In one of his cases, a female, aged 16, a congenital syphilis, which under arsphenamine was arrested, with a physical improvement in both diabetes and pulmonary tuberculosis. He also mentions a pleurisy in one of his patients, and in the 1918 report gives three patients, two male and one female, all in middle age (41, 42 and 43 respectively)—all of these, in their case histories, give a symptom of hemoptysis.

Shively considers hemoptysis a very frequent symptom, and states that he found it four times out of six cases under his care. Von Noorden states that in the case of diabetes and tuberculosis coming under his observation, he found hemoptysis present in 12%.

Sansum,[3] in giving his views on the three patients who suffered from diabetes mellitus and

pulmonary tuberculosis, and who were under his care for some time, does not state whether hemoptysis was a symptom or not, and Naunyn's report of two cases of diabetes, one had an attack of hemoptysis; he also had a pulmonary tuberculosis, and Cordier and Sedaillier[11] in describing the frequency of diabetes and pulmonary tuberculosis, mentioned two cases—one a middle aged man, suffering from diabetes for about four or five years, who had a severe cough accompanied by hemoptysis.

In studying the histories of the 32 patients that came under our observation, we find that six, or a little over 18%, had blood spitting or hemorrhage. From all these observations, the question arises: Is hemoptysis more frequent in the tuberculous individual who also is afflicted with diabetes, than the patient who has no such complication? In the tuberculous with a hemoptysis, with or without cavitation, a urinary examination for sugar should be made in every case. If this is found to be negative for sugar, then a blood sugar test should be made for determining the amount of sugar present in 100 CC. of blood. In advanced cases of pulmonary tuberculosis and diabetes, it has frequently been proven that the urine may be negative for sugar, and still a hyperglycemia may be present. It follows from this, that in every case of pulmonary tuberculosis with an accompanying hemoptysis, a urinary examination for sugar should be made; this to be followed at once by a complete blood sugar test. This to determine if diabetes may or may not be an accompanying malady.

A study of the sanatoria and hospital cases under our observation.[B] An analysis of the histories of the thirty-two patients which we had the privilege of studying, and with the physical examinations of some of the patients at different sanatoria and hospitals, showed to have many points of interest in common. This group represents patients who entered the various institutions from January, 11, 1925 (the first patient) to October 16, 1929, the last. As to age, the youngest was admitted at the age of 19, on November 19, 1929, and is still at the sanatorium. This patient diagnosed pulmonary tuberculosis, complication diabetes, with extensive pulmonary involvement, both upper lobes; the prognosis grave, the pulmonary lesion, active, moderately advanced. Small doses of insulin were administered, 10 to 15 units in the morning. The oldest patient having this dual complication was 67; advanced pulmonary lesion, progressive, with cavitation. The urine always sugar free on diet alone. This patient had a slight hemoptysis, while at the sanatorium. No blood sugar estimations were made, although the patient is now at the sanatorium, July 1, 1930, since his admission on June 16, 1925.

Of the number admitted, 21 were male and 11 female patients. Hemoptysis or hemorrhages were tabulated in 6. 8 had died while under observation. 7 were discharged or refused to remain longer in the sanatorium, and 17 are still under care, treatment and observation at the various sanatoria. Here the average age is: males 40 and females 52, all in middle life.

Some complications which were observed in this group of duality should be mentioned. A diabetic retinitis was diagnosed in one case; another suffered from acute tuberculous meningitis; a third, with a double pleural effusion. One had a diabetic gangrene of the second toe, right foot; this was successfully amputated, a very good recovery. A spontaneous pneumothorax developed in one and in three, owing to hemorrhages, lung compressions were instituted.

It is also noteworthy, that the blood sugar estimations were comparatively infrequent. Only in 14 patients out of the group of 25, were blood sugar tests made, and it is also significant to note that in one instance the CO_2 determination of the blood plasma is given as 45% normal.

However, when blood sugar estimations were made they were generally made with great regularity, at some of the sanatoria; in some instances once or twice a month; in others as often as once a week, covering a period of many months, and with a regulated diet, insulin was given systematically, usually before breakfast, after a 14 hour fast, with a one-hour interval for four or five hours or, blood sugar tests, and with the administration of appropriate units of insulin after the noon luncheon, and again with the evening meal, always followed by a repeated blood sugar test. In many patients the urine was found entirely sugar free, and this was sufficient evidence that repeated blood sugar tests should be made, because a negative urine test is not sufficient to give the accurate state of the

patient's physical condition, as is evident, particularly in advancing cases, the urinary sugar test may be nearly negative and still a very dangerous hyperglycemia may be present.

Out of the 32 patients of this group, 7 did not receive insulin. In these, under a strict diabetic diet, the sugar in the urine was very much lessened. In a few cases this was followed by complete absence of glycosuria. Out of this number, a youth of 21 years, with very extensive pulmonary involvement, with diabetes, it was deemed inadvisable to institute the insulin therapy.

As to the administration of insulin in the 25 remaining cases, we found the greatest variability, whereas, one patient with extensive pulmonary tuberculosis complicated with diabetes, was given one unit of insulin three times a day, to another patient with nearly the same physical findings, 70 units were given before breakfast, before dinner and before supper, a total of 210 units daily.

Although a very great discrepancy in the care and treatment of these 32 cases of pulmonary tuberculosis and diabetes existed, the cases that came under our observation and those cases cited from the records of the proceedings of the National Tuberculosis Association, all are agreed that the diabetes above all should receive the first, the full, consideration that both the diabetic treatment and the insulin medication have no deleterious influence on the tuberculous processes. This is now fairly well established. Also, we should caution in the giving of insulin, by constantly and repeatedly making use of the blood sugar estimation per 100 CC. of blood. This will guide us in the treatment of this dual disease, guard against a hyperglycemia, and possibly against a hypoglycemia, as well. In some of the cases given in this group, in which the dietetic and rest treatment alone were in use, with the administration of insulin in suitable amounts, possibly a quicker and more lasting result would have been achieved.

The history of one of the 32 cases under observation, may at this point not be amiss. It is simply intended to show the thorough manner of the care and treatment at one of the sanatoria.

No. 4717. Mrs. M. S., aged 40, admitted January 11, 1925. Discharged May 22, 1926. Unimproved. Pulmonary tuberculosis, with a severe type of diabetes. Received, before entering this hospital 30 units of insulin a day. Blood sugar, 133 mgs. per 100 CC. Extensive, involvement of both right and left upper lobes. April 24, 1926, urine sugar XXX, albumen X. On admission the patient showed a trace of acetone, and 2.26% sugar in the urine. Blood sugar 280 mgs. per 100 CC. Weight 121 pounds. On low diet for four days, the blood sugar was 133. Urine, both sugar and acetone a trace. Weight 115 pounds. Diet increased, 26 C, 21 P, 80 F. Insulin, 3 units, three times a day. This until March 13, 1926, when urine was sugar free. Blood sugar 166 Mg. per 100 CC. Now, on this diet, insulin, 3 units three times a day continued. A trace of acetone. Weight 114 pounds. Diet raised to 40 C, 25 P, 75 F. This until March 20. Insulin raised 4 units t.i.d. No sugar in the urine. Blood sugar 140 mg. per 100 CC. Trace of acetone. Weight 114 pounds. After March 20, raised diet to 20 C, 25 P, 150 F. Now a trace of sugar in the urine. Weight 113 pounds, blood sugar 160 mg. per 100 CC. Diet again raised on the 24th of March to 60 C, 25 P, 170 F. Insulin 5 units t.i.d. Urine now showed a slight trace of albumin, otherwise negative. Blood sugar 220 mgs. Insulin increased at 8 A. M. and 6 P. M. Diet raised to 65 C, 50 P, 300 F. Now, a total of 12 units of insulin in the morning, and 10 units in the afternoon. On this treatment no sugar in the urine, no acetone. Blood sugar 180 mg, per 100 CC. of blood. This appeared to be the patient's best balance, and so, with a blood sugar of 180 mgs. on this diet she was discharged. General condition improved, in spite of loss in weight. No activity in the chest.

THE TREATMENT OF DIABETES MELLITUS WHEN COMPLICATED BY PULMONARY TUBERCULOSIS

The original treatment for diabetes mellitus consisted in putting the patient on a strict diet until the urine became sugar free, then the gradual addition of carbohydrates in the form of green vegetables, a small amount of protein, in gradually increasing quantity; this to be followed by the addition of a small amount of fat. Close attention was given to the appearance of sugar in the urine and the increase or withdrawal of carbohydrates from the diet was closely studied and, finding pulmonary tuberculosis an accompanying disorder, absolute rest, with little or no exercise was instituted. This was the general treatment, but with the discovery of the new pancreatic hormone as a sovereign remedy for diabetes, the determination of the glucose tolerance in the patient became of first importance—how much glucose the human body can utilize satisfactorily. And then the Allen treatment—the fasting method, for one, two, three, or four days. This required courage. This, before the discovery of insulin, was the most rational procedure for the arrest of the diabetic process.

The Joslin way, the dietary regulation, the gradual reduction method, was then also used.

Landis (1922),[2] Case 3; P. G., Female, aged 16. Pulmonary tuberculosis, diabetes and syphilis (latent). Intensive arsphenamine treatment; the first indication of glycosuria, one to two per cent. Fasting, blood sugar 180 mgs. per 100 CC. In this patient, after the syphilis was controlled, a rational diet was instituted, and a diet of 125 C, 100 P, 125 F. This, with rest and quiet, the pulmonary symptoms gradually disappeared, and the urine free from sugar. This was before insulin was known as a therapeutic remedy for the control of diabetes.

This was the method of treatment then in vogue when we first considered the disorder known as diabetes mellitus, but with the association of pulmonary tuberculosis in the same individual, our views concerning the treatment changed somewhat, and the question arose, which malady should receive our immediate attention. Should we ignore the diabetes and treat the tuberculosis, or should we ignore the tuberculosis and treat the diabetes? Control the diabetes first, treat the diabetic condition first and foremost, unless the patient shows all the signs of a fatal or early terminal tuberculosis.

Sansum (1923)[3] reports his observation on three patients in the last stages of the disease, with a food tolerance of 289, 935, and 1,071 calories, respectively, but following the injection of insulin, the patients became free from all diabetic symptoms. In all three cases the sputum reduced and everything showed a progressive improvement in the clinical, the roentgenologic and the laboratory findings. To summarize: the essential points of success (a) the patient must be kept free from sugar in the urine, and the blood sugar should be normal, (b) the patient should be kept continually free from acidosis, and (c) the patient should be properly nourished.

He suggests, in the use of insulin, these four conditions:

1. The sugar burning utilizing power of insulin must be determined.

2. The patient's natural tolerance should also be determined.

3. The exact value of a proper diet should be known.

4. The dosage of insulin be adjusted to make up the difference between the sugar formers of the given diet and those of patient's natural powers.

From close observation, he states that patients suffering from tuberculosis, complicated with diabetes, have the same chance of recovery as have patients without diabetes. This, under a strict diabetic diet and treatment with insulin. His observation followed the early introduction of insulin as a therapeutic remedy.

IN ORDER TO TREAT THE DIABETIC-TUBERCULOUS PATIENT SUCCESSFULLY, THE FOLLOWING RULES AND AXIOMS SHOULD BE EARLY OBSERVED

1. The pancreatic hormone, insulin, appears to regulate the carbohydrate metabolism when injected into the diabetic.

2. Insulin, when used in the diabetic suffering from active pulmonary tuberculosis, must be used with great caution, from fear of producing a fatal hypoglycemia; as the tuberculosis progresses the glycemia disappears.

3. A clinical observation is that with an advancing pulmonary tuberculosis, the presence of sugar may become lessened, or may be entirely absent, and parallel with this an increased carbohydrate tolerance may be noticeable.

4. In cases of diabetes of long standing, a gradual rise of blood sugar is noticable; hence, in these instances, the presence of sugar in the urine may give misleading findings.

5. There is excellent evidence indicating that the tuberculous outbreak occurs more often in the diabetic showing sugar, and is more carelessly treated, than among strictly treated patients being sugar free.

6. In calculating an appropriate diet for the patient, we must observe that we do not exceed the ratio of 1.5 to 1 of fatty acids to glucose.

7. It is interesting to note that as the tuberculous process is progressing, the glycemia lessens, and just before the death of the patient, the urine may be entirely sugar free.

8. In a chronic pulmonary tuberculous individual, a diabetic complication is very infrequent, whilst a terminal tuberculous condition in diabetes is very frequently observed.

9. Diabetes, even the severest grade, may practically disappear when pulmonary tuberculosis intervenes and reaches an abnormal type.

10. Severe acidosis will be found to develop

rarely in the presence of active pulmonary tuberculosis.

Caution. An extended medical treatment or surgical interference should not be attempted on a severe diabetic, without a full knowledge of the blood sugar estimation, and also determining the alkali reserve of the body to the CO_2 extraction.

In every case of advanced pulmonary tuberculosis accompanied by diabetes, the use of insulin is justifiable, but caution must be exercised if the disease is accompanied by fever, due to a spreading of the tuberculous process. This development of new tuberculous areas in the lungs may lead to a spontaneous carbohydrate tolerance. In that event, the use of insulin may lead to great damage, producing, with its constant use, a hypoglycemia.

The question of an insulin-like hormone being produced in pathologic tissue. Lundberg[5] in an elaborate and exhaustive paper from the Research Laboratory of Prof. Jacobaeus, attempts to offer proof that not only the tuberculous granulation tissue, but many other pathologic processes give off insulin-like substances. He states that the hypotheses have been advanced, which he attempts to prove, "that an extended tuberculous affection of the lungs may produce an insulin-like substance, which may find ready entrance into the blood stream; hence the question—Does the pulmonary tuberculous process exert a favorable influence on the diabetic condition? The proof of this would be, if it were possible to produce an insulin-like product from tuberculous granulation tissue. We produced from tuberculous granulation tissue, an extract possessing insulin-like properties, possessing the property of producing a carbohydrate change, dissociation or metabolism —this we named Parainsulin. However, no insulin-like reaction has been observed from an extract obtained from either the tubercle bacillus, or from tuberculin, but an insulin-like substance has been extracted from tuberculous granulation tissue. This, like insulin, produces a high sugar tolerance. This insulinoid body produces in the diabetic a sugar reduction; the property of lessening the sugar content of the blood, a hypoglycemia."

"It became evident that the tuberculous granulation tissue in the body causes a disturbance in the carbohydrate change similar to the action of insulin. When we disregard the blood sugar increase, we find the symptoms of an insulin intoxication (poisoning), hence, diabetic patients may become hyper-sensitive to insulin, because an insulin-like product is given off in the lung, passing into the blood stream. In such patients, the sugar or acetone may entirely disappear from the urine, and with a rapid pulmonary disease, the increased sensitization of the patient toward insulin may increase. Further, we must assume that in this granulation tissue of the tuberculous, as well as in tumor tissue, a product is brought about under carbohydrate change or metabolism and continues to develop; and then it may be also assumed that substances like insulin or substances which stimulate the production of insulin in the body, are thrown into the blood stream from sarcomatous growths."

According to Naunyn, a carbohydrate disturbance, not only from pulmonary tuberculosis, but also tabes, carcinoma, and other tumor tissues, may favorably influence the diabetic process. In cachectic diseases, there was also a lessening of the sugar output observed.

Joslin states[6] that in a case of diabetes, the diagnosis of tuberculosis was suspected, because the patient's tolerance for glucose was gradually improving. The most severe case of diabetes may well disappear if an active and progressive tuberculous process is an accompaniment, due to the parainsulin body. Diabetes, even of the severest grade, may practically disappear when tuberculosis intervenes and reaches an advanced stage. Many clinicians have observed such instances; hence an unexplained improvement in the tolerance of the diabetic for carbohydrates should always awaken suspicion, and the question arises: Is parainsulin or insulinoid a specific product?

Clinical observation has confirmed that a carbohydrate tolerance in the diabetic is often improved when an active pulmonary tuberculous process is a concomitant disorder. This cannot be explained by a pancreatic functioning as producing more pancreatic insulin, nor by the symptoms of profuse sweating, tachycardia, or a reduced blood pressure, etc. Is it not evident that just these are the symptoms generally met with in tuberculosis? Are these symptoms in the tuberculous not an expression of intoxication, per se, an expression of the extra insulin upbuilding in the tuberculous granulation tissue of the pulmonary tuberculous individual? Mention should be made here of the fact that tuberculous individuals are not constantly annoyed by low blood pressure. This may be expected from the produced extract of the tuberculous granulation tissue. This also may be explained by assuming that this tissue produces an accessory insulin-like substance similar to the insulin of the pancreas. There must exist a carbohydrate changing or splitting power in the tuberculous

granulation tissue. In a tuberculous, in which the process is much advanced, and in which the parainsulin product is in process of development, the symptoms may correspond with that of the sympathetic nervous system, agreeing with a typical hyperinsulinism. It may be that while active tuberculous tissue destruction is taking place, that in the underlying adjacent tissue, a product simulating the hormone producing carbohydrate metabolism is found. This product must be accepted as an insulin-like substance, insulinoid, isolated from tuberculosis tissue, but can not be extracted from the tubercle bacillus, nor from tuberculin. It has been observed that tumors developing in a diabetic show a more malignant tendency. This is manifest by more rapid growth, infiltration of the surrounding tissue, and an early cachexia. In a recent publication Bordley, August, 1930, refers to the disappearance of diabetes mellitus in a case of long standing portal cirrhosis of the liver, coming under his observation, in which the mellitus cleared up without any assignable cause. From the observations of Naunyn, Lundberg and others, we may assume that the carcinomatous tumor mass produced a hormone like substance simulating insulin, this increased the carbohydrate tolerance, which exerted an ameliorating effect on the diabetes.

CONCLUSIONS

It is now generally agreed that diabetes predisposes the incipiency and development of pulmonary tuberculosis, but on the other hand, in a number of cases an association of these two diseases, an improvement, even cures, have been observed of the diabetic condition—an improved metabolism, this, however, with a further development and activation of the tuberculous process.

The greater majority of diabetic individuals do not become tuberculous, but those in whom tuberculous disease as a complication is present, usually show a very severe type of tuberculosis.

It has frequently been observed, in a progressive tuberculous process in a diabetic, that the glycosuria lessens and disappears entirely at the time of the patient's death.

A diabetes, in the course of chronic pulmonary tuberculosis, is infrequent, but a final pthisis in a diabetic has been frequently observed. The clinical observation has shown that with a progressing of the phthisical process, the glucose in the urine may have lessened or disappeared entirely.

It is not necessary that the diabetic is suffering from a high grade diabetes to become tuberculous, but if the diabetic does become tuberculous it is usually of a severe, grave form of the disease leading to speedy death. However, as the tuberculosis progresses the sugar tolerance increases, and there may not be any lessening of body weight.

A few decades ago Nathan Raw[5] reaffirmed from personal observation that diabetes greatly favors the growth of the tubercle bacillus; whereas gout seems to inhibit this growth. He states that it is well known that diabetes, as a complication in tuberculosis, favors the destructive process, but tuberculosis does not predispose to diabetes. In considering either diabetes or gout, the blood plasma appears to be of prime importance; evidenced by the fact that if to a culture of the human bacillus blood of a gouty individual is added, a perceptable lessening, a slowing of the bacillary growth can be observed; whereas, to a similar culture, if the blood from a diabetic person is added, there will be observed a more rapid growth, a greater increase in the number of colonies.

In practically all cases the diabetes was the primary disorder, in which the tuberculous process subsequently developed; the presence of sugar in the tissue producing a more favorable soil upon which the tubercle bacillus can flourish most luxuriantly.

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2370 S. W. 23rd Terrace.

CONGENITAL DACRYOCYSTITIS*

HARRY W. WOODRUFF, M. D.

JOLIET, ILL.

Occasionally one sees cases of dacryocystitis in young children and infants, sometimes in older children, the etiology of which probably goes back to some congenital malformation. I wish to emphasize that if these cases are taken in hand early enough they are so simple to deal with that there is little excuse for their becoming what I might designate as seriously chronic. In the previous paper on embryology there was one slide showing the outer wall of the nasal cavity in the infant at birth. I have a picture from Collins and Mayo's Pathology, showing a similar view, but also indicating the point of beginning of the nasal duct, that is the ocular end and also the nasal end, and this shows that the direction of the duct at that time is quite different than it is later.

There are five fissures in the face of the human embryo at the fourth week, radiating from the oral cavity. The upper pair, the frontonasal, give origin in their middle part to the lacrimal canals—at first a strand of cells without any lumen. The lumen forms first in the upper part and last at the inferior meatus. This part becomes patent at term or even later. Atresia at this point is the most common form of malformation of the lacrimal apparatus. It is due either to failure of union between the column of epithelium of the duct with the epithelium of the nasal mucous membrane, or imperfect canalization of the column of epithelium which forms the duct.

Before birth the nose and lacrimal ducts are filled with epithelial debris, which is normally cleared away by aspiration. Occasionally, however, this plug may remain impacted in the nasal end of the duct. That is the most frequent form of congenital dacryocystitis—the remains of epithelial debris. How many cases recover without any interference I am not prepared to say—I have never known definitely of such cases.

In my records, I have the histories of a number of cases occurring back through a number of years, which show the age of the infant at the time the first visit was made to the eye doctor. One came in at four months of age, another at nine months, another at fourteen months; there are records at three, at five and two months, one at six weeks of age, and fourteen months seems to have been the oldest. The average is about six and one-half months. Just how long these cases would continue, or whether they would recover spontaneously or not, I am not certain. Most of these cases had been treated by boric wash and of course argyrol. Such treatment is not particularly detrimental, but is of course useless so far as getting at the etiological factor.

I have here an infant's skull, which will give you some idea of the shortness of the lacrimal canal, about 5 or 6 mm. in length from the lacrimal fossa to the floor of the nose.

I have handled these cases something in this manner. The baby is brought in with a history such as I have indicated; has been treated by argyrol, boric solution; there is a continual secretion of pus. You can almost make the diagnosis without definite examination, but of course to be certain you make pressure over the lacrimal sac. The puncta are small, and I am in the habit of using a little magnification so that I may see the line of pus come out of the puncta. You can treat these cases with or without anesthesia, although it is more comfortable to have them asleep. A large number require no other treat-

*Read before the Section on Eye, Ear, Nose and Throat, Illinois State Medical Society, East St. Louis, May 5, 1931.

ment than dilating the puncta with the lacrimal dilator and washing the sac.

You must watch the infant to see whether he makes a gasp for breath and swallows. There will be a regurgitation of fluid if it does not go into the throat. The passage of a Bowman probe will in most cases cure the case, but rarely it will not. Then it is necessary to pass the probe down into the nose, then with an ear speculum in the nasal cavity, pass another probe into the end of the duct, perhaps making a little rubing to break through. In some cases I have explained the difficulty in rupturing the membrane as due to the fact that the duct is so short that the probe simply pushes the membrane against the floor of the nose. Of course that is as far as you can go. If you have counter pressure with a probe you can rupture the membrane.

DISCUSSION

Dr. O. B. Nugent, Chicago: Nowadays the laity understand the danger of pus exuding from the eye, and become very apprehensive as to whether it might be a case of opthalmia neonatorum, therefore the doctor often has a chance to see these cases early, as soon as they start. However, they are not commonly seen so early in life as we find it in neonatorum. The cause of such a condition is likely to be as Dr. Woodruff mentioned, not the lack of a canal opening, but a plug, perhaps by the mucus which forms in the lower end of the nasal duct. Some of these ducts do not open, and some have caused a blind cul de sac in which bacteria can form. Of course when they are opened drainage takes place and the sac immediately becomes normal. Some deformities of the lacrimal system are noted and perhaps they may be classed as a deformity or lack of a patent canal.

Two months ago I demonstrated a case to the Chicago Ophthalmological Society in which there was a lack of proper position of the puncta, on the lower lid of each eye, being 2 mm. from the lacrimal papilla, and in the upper 1½ mm. In a case of this sort there is no possibility of tears being carried through the sac, and if there was any stoppage of the canal the sac would not be cleansed with tears and infection would take place. This patient, eighteen years of age, had no history of any trouble, though the condition had always been present. The diagnosis should be made, as Dr. Woodruff said, by demonstration of pus that might be squeezed out of the puncta from the sac, and opened early.

Dr. George Francis Suker, Chicago: I think this is a very interesting question, and Dr. Woodruff is to be complimented on his presentation. I wish to endorse everything he said. The passage of a probe in these cases should always be under more or less pressure, and should be accompanied by a sound into the nasal passage in order to feel the free end of lacrimal probe. For a probe I use a small gauged silver tube and can thus irrigate through, that is, I can see that the membranous end in the nasal duct has been perforated as the fluid comes out of the nose. I leave the tube in for twenty-four or forty-eight hours and then withdraw it. This insures the retraction of the membrane. If it is just a concretion, it is not necessary to leave the probe in for more than several minutes. But, as you cannot tell always which type of occlusion it is, the safer plan is to have the probe in situ for 24 or 48 hours.

The confounding of this condition with gonorrheal ophthalmia is just one of carelessness on the part of the physician. There is no excuse for that. However, there is one thing that is rather unusual in these youngsters. The majority are unilateral. I have seen only a few in all I have seen at Cook County Hospital that were bilateral. I agree that treatment with passage of probe is illogical and simply adds insult to injury.

Dr. W. R. Fringer, Rockford: My data on these cases is rather indefinite. Some years ago Dr. Crigler of New York wrote an article on this condition, and he advocated letting the secretion accumulate. Then when the child is brought to you, put your thumb over the puncta and squeeze the mucus into the nasal duct and as the membrane at the end of the duct is thin, it goes through. I have recently had three cases. In one I felt the membrane give way, and that was all that was necessary. The other was a very young child, not over one month of age, and got well. The third has not done so well.

Dr. Harry Gradle, Chicago: With all due respect to Dr. Woodruff's inches and years, I cannot agree with him. In the embryo the tear passages are not one continuous strand, but are an invagination of epithelium arising from the conjunctival sac immediately above the coruncle proceeding to the nose, bending downward, and also from the nasal end, proceeding upward. It does join together at the lower end of the nasal sac proper, and in the normal case the lumen is established. In some cases the lumen is not established, and there remains a row of cells, four to eight cells thick, which excludes the sac. In those cases all the pressure in the world will do no good. It is necessary to do it mechanically. In some cases the lower end is excluded by debris or what you wish, and in such cases fluid under pressure will clear them up.

I do not think it is correct to speak of dacryocystitis in the sense of a bacterial invasion—it is a misnomer. We have a cul de sac in which the tears accumulate by force of gravity, and that causes maceration of the surface of the lining of the sac. The tears are sterile. The pus is composed of epithelial cells and a few leucocytes as a result of inflammatory reaction. The treatment is to perforate the membrane. I cannot see the necessity for leaving a probe of any kind or any similar device in the sac after it has once been perforated.

Dr. Harry Woodruff, Joliet (closing): I am pleased

that such a simple subject as this should elicit so much discussion. I have only rarely found it necessary to make counter-pressure as Dr. Suker does, never to the point of advising it in nearly all cases, and I also do not see the necessity of leaving a cannula in place for any length of time at all. Some of these cases have been thought of as being gonorrheal, but of course the clinical symptoms and the microscopic examination of the secretion soon clears up that point. I have seen a number of cases that were bilateral; not many, but a few. I have never seen any bad results from the use of argyrol, but I have often thought that with argyrol being used so much at home, in these cases it might easily produce an argyrosis. However, most mothers are so anxious about their infants that they would not go more than a year or so without seeking advice from an oculist.

I think it is possible to cure some of these cases by pressure, as has been referred to, but these sacs do not puff up and collapse as they do in adults, so that you do not have much to press upon.

Regarding the embryology, I can only say that my authorities have been Collins and Mayo, and that description has been most gratifying to me as to how these defects come about. When you take into consideration that the cases are seen at an average age of six months after birth, you can hardly conceive of these secretions remaining sterile. They certainly contain bacteria and plenty of them.

TREATMENT OF FISSURE IN ANO

CHARLES J. DRUECK, M. D., F. A. C. S.
CHICAGO

Every fissure should be dealt with promptly and thoroughly not only for the immediate relief from suffering but to avoid the possibility of septic infection spreading to the perirectal fossa and thus originating a perirectal abscess or fistula. Therefore, even if the fissure is due to some constitutional disease, a local as well as general treatment is required, but the underlying syphilis, tuberculosis, polypus, hemorrhoid or proctitis will demand its own attention. In the case of infants and children only mildly astringent and soothing applications can be made.

Two general principles govern the treatment of fissure: 1. rest; 2, drainage.

Opiates and sedatives increase constipation, thereby increasing the trauma and pain and are to be interdicted. Constipation must be relieved and the stools kept mushy or soluble.

Palliative Treatment. Laxatives are to be used very guardedly. Salines produce very irritating liquid stools and resinous cathartics like podophyllin and aloes, are also objectionable because of their effect on the colon. The old fashioned remedy of sulphur and cream of tartar or the more modern remedy of phenolphthalein may serve well in selected cases. Before each defecation the patient should take an enema of an ounce of olive oil or glycerine, using a soft rubber ear syringe, to soften the fecal mass and assist in its easy evacuation.

Following defecation and also night and morning, the patient should sit in a hot sitz bath, and

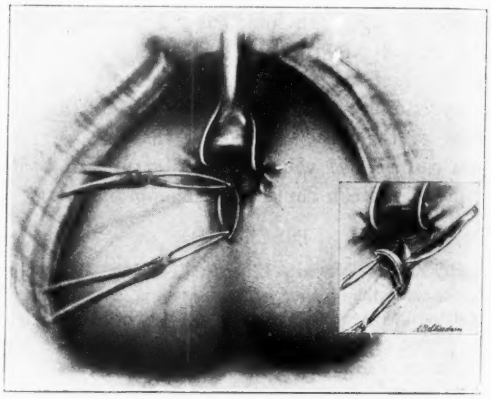

Fig. 1. Excision of the Fissure.

cleanse the anus with cotton swabs that any irritating substance in the fissure may be washed out. The parts should then be dried, and a mild dusting powder and a piece of gauze placed between the buttocks that any secretion may be absorbed. A short rest may be necessary following the defecation to relieve the patient from exhaustive suffering but usually he will be able to attend to business until the next bowel movement.

The diet must be arranged so as to exclude articles that leave much residue or produce hard, packed stools.

Some very recent cases without apparent deep infection are too painful for the above mentioned manipulations but respond to the deep injection of a local anesthetic which relaxes the sphincter for several days. The greatest single factor in preventing spontaneous healing of an anal fissure is this sphincteric tenesmus. Therefore, our treatment must include relaxing this muscle sufficiently long to allow the lesion to heal.

The injection of anesthetics was suggested by Dr. Graham several years ago. No preparation on the part of the patient is needed. The circum-

anal skin is sterilized and ten to fifteen drops of a 5 per cent. solution of quinine and urea hydrochloride is injected directly into the sphincter muscle under the fissure. The point for injection is just below the proximal end of the fissure. Rather severe pain is experienced by the patient for a few seconds but anesthesia is complete by the time the injection is completed. The whole procedure should not consume over thirty seconds.

At the meeting of the American Proctologic Society in 1927, Dr. Graham reported 128 cases treated by this method with immediate and complete relief in 98. Twelve patients reported a return of symptoms in from six weeks to three months following the treatment. A second treatment was given to these patients with a result that a cure was effected in 8. This method is devoid of all danger if properly used. Extreme care must be taken not to inject the strong solution into the skin as a slough would surely result. The anesthetic effect is so pronounced and so prolonged that no anodynes are needed and the patient resumes his occupation at once. The sphincter stays relaxed for a sufficient period to allow the fissure to heal.

Recent fissures, before the wound edges are thickened or undermined and before pus burrowing has occurred, can generally be cured without having to resort to operation, but a good deal depends upon the patient and upon the severity of the symptoms.

The first thing to do is to make sure that the bowels act easily with a soft stool by giving chimaline, grs. 10, or mineral oil, one-half ounce, after each meal. After each bowel movement the patient should sit in a hot sitz bath for fifteen minutes and carefully but thoroughly wash the parts with soap. Because of the favorable results obtained in recent years by the use of soaps and soap solutions as antiseptics, Renaud[1] conducted a series of experiments to determine their value. Using solutions of sodium oleate, he sometimes washed ulcerated surfaces with a 2 per cent. solution, sometimes covered them with compresses of the same solution and sometimes covered the tissues with a soft ointment, obtained by the addition of electrolytes to concentrated solutions. The results were excellent. Not only did the solution have a marked curative effect on necrotic and fetid tissues, but true cicatrization was often observed. Especially noteworthy results were observed in the treatment of ulcerations of the genitalia. The author is convinced, therefore, that because of their extreme fluidity as a result of which they reach and collect all the finest particles and because of their harmless effect on the tissues, soap solutions are destined to become the most efficacious of antiseptics.

After this cleansing, if the pain still continues he should lie down prone and apply the following sedative:

℞ Calomel .....dr. 4
Ext. Stramonii .....gr. 3
Ung Hydrastal .....oz. 1

This should be applied with a cotton swab before and after each bowel movement and before retiring at night. A patient with an acute fissure should not walk about much, but keep as quiet as possible until it has healed.

Each day, at the office, the patient is placed in the left lateral prone position, a conical fenestrated speculum is carefully inserted with the shutter over the fissure, the shutter is withdrawn and the speculum adjusted to bring the fissure well into view. Any particles of foreign matter, feces and thin gray or yellowish secretion so often covering the ulcer must be gently removed with swabs dipped in warm normal salt solution. The surface is then carefully dried and lightly painted with equal parts of balsam of Peru and castor oil. Sometimes this occasions a spasm of the sphincter for a time after the treatment, but this may be avoided by smearing the field promptly with stramonium and hydrastal ointment above mentioned before the patient leaves the table.

A cure should be accomplished by this course in two or three weeks. After the pain is relieved the patient should be watched to make sure that the fissure has really healed. If relief is not obtained within this time the fissure should be treated surgically.

OPERATIVE TREATMENT

1. Cauterization.
2. Excision.

Cauterization. When the pain is very acute and the parts are exceedingly tender, it may be impossible to make the soothing applications mentioned above and therefore palliative treatment cannot be effective.

With gentleness and persistence the nates can

be separated carefully and slowly until the fissure is exposed. In women a finger can be introduced into the vagina and the rectum above the external sphincter pushed down until enough everts through the anus to expose the fissure. A small swab of 4 per cent. cocaine is applied to the ulcer and the swab held in place while the parts are released and left at repose. This manipulation occasions some discomfort and ten or fifteen minutes are necessary to develop full anesthesia. Having assured ourselves, by gentle probing, that the entire ulcer and its walls are anesthetized, a cotton-tipped probe, tightly twisted, is dipped into pure phenol, liquified by heat, and the acid permitted to crystallize on the cotton. The entire floor and sides are thoroughly cauterized until the whole surface turns white, being careful that the acid does not touch any surface that it is not intended to cauterize. A similar tipped probe is now dipped into dilute alcohol, and the outer edges of the fissure are swabbed off. This limits the phenol to the parts to which it was applied.

Excision. When the sphincters are hypertrophied, the wound edges swollen, or the sentinel pile present, nothing short of surgical removal of the ulcer and its associated pathology will be successful. Depending upon the temperament of the patient, a local or general anesthetic may be preferred, the majority of our cases are operated on under infiltration anesthesia, those with spastic sphincters under sacral block, and only a few are handled under gas anesthesia. After our patient is properly prepared the fissure is grasped at its upper extremity with a toothed forceps. Longitudinal incisions beginning above the fissure are made on either side of it; each incision slanting inward until it meets its fellow beneath the ulcer, making a V-shaped wound (Fig. 1.), the two incisions uniting again externally below the fissure. At its upper limit the incision is superficial and involves only the mucous membrane, but at the lower border or skin terminus the incisions are a half inch in width and carried to nearly an equal depth. By this technic the base of the fissure is removed deep enough to expose the muscle wall and the outer end of the wound extends well out onto the skin to facilitate drainage.

The sentinel pile, if present, is included in the parts cut away, and also any papilla or small polypoid growths at the upper end of the fissure, which might fall into the rent and hold the wound apart.

A small branch of the inferior hemorrhoidal vein is frequently divided during the excision, but it is seldom necessary to ligate it. Firm pressure with a hot compress soon checks the hemorrhage.

Sinuses burrowing under the mucous membrane exist in many cases of fissure and must be sought for with a probe—every slight variation from the usual appearance of the base or edges of the wound must be carefully explored with the probe. Sometimes they are quite superficial and at other times they are found in the floor of ulcer. Later, as healing progresses, any sluggish patches are to be carefully explored and a sinus will usually be found leading from them. Whenever these channels are found they are incised their whole length.

Swollen or inflamed anal folds coexisting with the fissure should be incised and probed, and if a channel is found it should be widely opened at once.

Unless all of these tumors and sinuses are properly removed and all redundant skin is removed from about the fissure a failure to cure will result.

Some surgeons recommend dividing the anal sphincter, but this, we feel, is a mistake, as there is no necessity for such a procedure and doing so may easily result in serious damage.

In cases of long standing where the sphincter is hypertrophied it will need divulsion by a careful and thorough kneading. With one or more fingers gently introduced the entire circumference of the bowel may be massaged until the sphincters finally will be quite soft and pliable and all adhesions are broken up. If a general anesthetic is administered I prefer nitrous oxid gas and oxygen. Under this anesthetic there is not the muscular relaxation of ether or chloroform anesthesia, so that the operator is better able to determine the force and time required to satisfactorily dilate the sphincters.

Technic of Dilatation. Divulsion of the sphincters, literally interpreted, means to "tear or rend asunder"—and that is what usually occurs when the patient is chloroformed and the muscles are stretched by thrusting the thumbs through the anal sphincter and dragging them sideways until they touch the ischial tuberosities. But such

brutal traumatism is unnecessary. What we wish to accomplish is simply to overcome the exaggerated contractility of the sphincter.

One index finger or a thumb is introduced through the anus and slowly but firmly rolled round and round, thus massaging the irritated fibers, until they soften. Two fingers are then introduced and the procedure further continued until the whole sphincter muscle is flabby and pulplike. This requires, perhaps, ten minutes treatment. Do not hurry the work. Sometimes very gentle manipulating will suffice, and sometimes firm pressure is needed. The mucous membrane must not be torn nor any bleeding produced, although extravasation of blood into the cellular tissues about the anus may occur.

Dilatation should never be carried to the degree of divulsion which endangers paralysis, but only sufficiently to break up the adhesions that have formed about and beneath the ulcer and to re-establish free circulation in the tissues, restoring normal elasticity and expansibility and preventing the constant or spasmodic contractions. During the dilatation the sphincter muscle should be thoroughly massaged and manipulated between the fingers.

When but a moderate degree of dilatation is required it may be performed under local anesthesia and by careful preparation of selected cases considerable dilatation may be accomplished. Not all patients are of suitable temperament for such manipulation and a general anesthesia is often required.

In the case of children this same plan is carried out in a little different manner. The nurse dilates the sphincter by putting a rubber finger cot on her little finger and after anointing it well with the soothing ointment above mentioned, carefully inserts it into the bowel, going up a little higher each day. If the pain is too severe the fissure should be touched with cocaine solution. Following this treatment the soothing ointment should be applied about the fissure externally.

After Treatment. The whole wound is now well anointed with heavy petrolatum and the wound packed with parafined gauze laid in narrow layers. A light anal dressing with perineal support concludes the dressings. Each day the gauze packing is removed. This removal is painless, quite a contrast to a dry gauze packing which becomes filled with granulations and blood clots. As the gauze is removed the wound is flushed well with saline solution or water and these flushings are repeated once each day and also following each bowel movement, until the field is completely healed, which requires about three weeks. During these dressings the edges must be carefully separated by the attendant pulling the buttocks apart while narrow strips of vaselined gauze are placed between the wound edges. The whole wound is exposed at each dressing and regeneration develops from the base. Particular attention must be given to the upper limit of the wound and also the lower outlet that perfect drainage may be provided.

The patient should not be allowed to be about until the wound has completely healed, and care should be taken to keep the stools free for a considerable time thereafter.

By this procedure the cure is absolute and the relief of pain is practically immediate. There is some burning pain from the cut wound, but it is trivial in comparison to that due to the fissure, and it soon passes away.

It is advisable, although not necessary, that the patient keep his bed for a day or two after the operation. His bowels are easily confined for two or three days by keeping him on a liquid and absorbable diet.

On the evening before the bowels are to be emptied the first time he is given a level teaspoonful of compound licorice powder and early the next morning he is given, through a soft rubber catheter, an enema of 8 ounces of soap suds or mineral oil.

The evacuations are thereafter kept free and the movements soft, and after each defecation the patient should take a warm antiseptic sitz bath. There may be a temporary incontinence following this operation, but this disappears as the wound heals. When the fissure has existed continuously for several months, or when it has been operated upon and has not healed properly the possibility of syphilis will call for a blood examination, and also tuberculous, anemic or rheumatic factors must not be overlooked.

Irritable ulcer at the anus associated with catarrhal inflammation within the rectum is obviously not amenable to operation but demands treatment of the underlying cause. Local irrigations of 20 per cent. solution of krameria will

give much relief in these cases by relieving the irritating mucous discharged.

There are many factors besides the ulcer itself that require attention at the operation and during the after treatment. There has been a long train of local disease leading up to the development of the fissure and these factors must be remedied. The patient is very apt to neglect himself as soon as his painful symptoms are relieved, but the physician must impress upon him the serious nature of the disease and the importance of the continued treatment for the required length of time.

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1. Renaud, M.: Soap Treatment of Wounds and Ulcerated Surfaces, Bull. et Mem de la Soc. Med. des Hospitaux de Paris, 54, Nov. 10, 1930 p. 1584.

EMBRYOLOGICAL DEVELOPMENT OF THE NASAL ACCESSORY SINUSES. LANTERN DEMONSTRATION*

W. L. Hanson, M. D.

EAST ST. LOUIS

According to J. Parsons Schaeffer the proton or rudiment of the nose and the olfactory organ is a paired convex area of the cranial ectoderm located near the closed anterior neuropore. It is seen as a thickening of the sensory epithelium in this area.

The epithelium of the olfactory placodes (Kupffer) is seen in the third week of embryonal life (4-5mm.) These placodes are situated bilaterally on the wall of the forebrain cephalic to the primitive oral fossa.

The lateral wall of the nasal fossa of a 35 day embryo shows no evidence of its later complexity.

The turbinates of the nose arise on both the lateral and medial walls of the nasal fossa but by a process of unequal growth the ethmoidal turbinates are transferred entirely to the lateral nasal wall.

*Read before the Section on Eye, Ear, Nose and Throat, Illinois State Medical Society, East St. Louis, May 5, 1931.

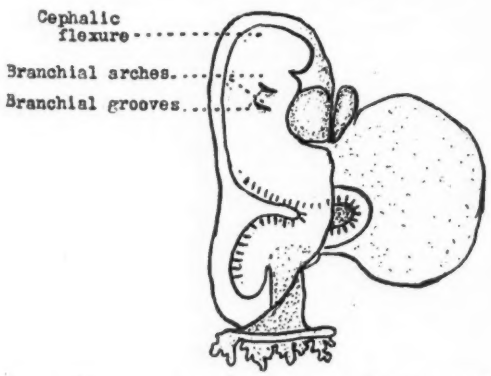


Fig. 1. Human embryo 2.15 mm. long. (His. Fig. 122)

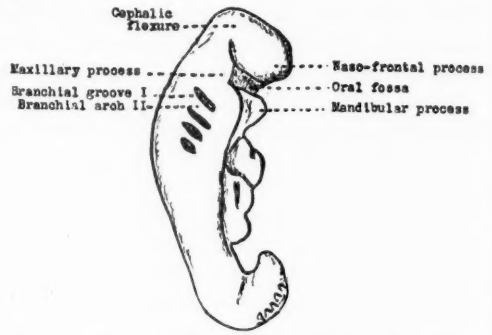


Fig. 2. Human embryo of the third week. His. (Bailey & Miller, Fig. 122)

Serial sections of 40 day embryos show the lateral wall of the middle meatus even and unbroken but in embryos of 40 to 60 days this region presents a crescentic shaped fold. This fold is the rudiment of the uncinate process. The development of the uncinate process forms a furrow superior to it known as the primitive *infundibulum* ethmoidale.

THE MAXILLARY SINUS

The maxillary sinus primitively as described by Schaeffer is an evagination of the mucous membrane of the floor or lateral wall of the infundibulum ethmoidale. It is evident at 70th day and usually is a single pouch. At times the early sinus occupies the greater portion of the infundibulum and it is difficult to separate them. The doubling of the primitive maxillary-sinus pouch may explain some of the rare double adult maxillary sinuses, each with an independent ostium in communication with the ethmoidal infundibulum, i. e., each evaginating sac developing independent of its mate.

The early maxillary sinus is for a time a slit like cavity in the membranous lateral wall of the nose. It extends inferiorally into the recess formed by the union of the lateral cartilaginous plate with that of the inferior nasal conchae. By resorption of the cartilaginous nasal capsule intervening between the maxilla and the develop-

ing maxillary sinus sac the latter ultimately comes into contact with the maxilla. It is largest ventro dorsal direction while medio laterally it occupies little space.

THE FRONTAL SINUS

The nasofrontal region is genetically an outgrowth from the ventral and cephalic end of the middle nasal conchae. The mucosa of this part

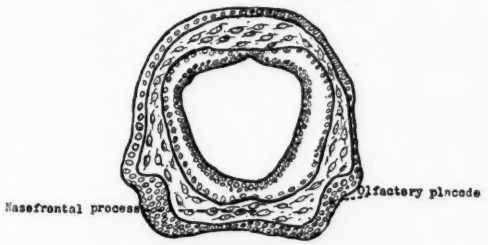


Fig. 3. Section through the head of a human embryo aged approximately three weeks. The section shows the olfactory placodes sharply delimited from the surrounding head ectoblast. (Redrawn from Kollmann.) (Shaeffer, Fig. 1)

of the middle meatus is, therefore, the proton of what subsequently becomes the recessus frontalis of the middle nasal meatus. The recessus frontalis in turn is the rudiment of the sinus frontalis and certain of the anterior group of the cellulae ethmoidales. As early as the end of the 3rd month of embryonic life one sees evidence of a beginning extension of the middle nasal meatus in a ventro cephalic direction. This is the beginning of the sinus frontalis.

For some time the lateral wall of the recessus frontalis is even and unbroken and gives no evidence of the later complexity which characterizes this region. Coronal sections and transections

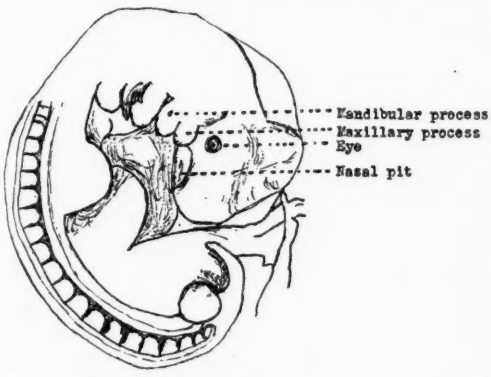


Fig. 4. Human embryo with twenty-seven pairs of primitive segments (7 mm., 26 days.) Mall. (Bailey and Miller, Fig. 123)

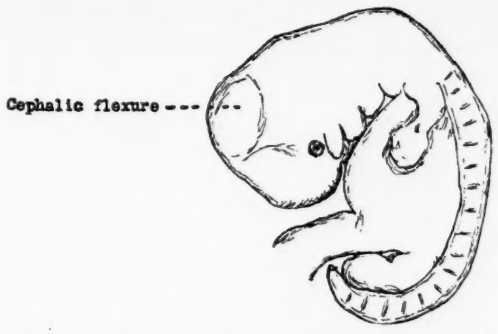


Fig. 5. Human embryo 11 mm. long (31-34 days). His. (Bailey and Miller, Fig. 125)

of the recessus frontalis of a 4-month fetus show the lateral nasal plate of cartilage thickened at certain points. These thickened cartilaginous areas—the precursors of the folds or accessory conchae which later configure the lateral wall of the recessus frontalis—vary in number and are for a period low and inconspicuous and do not throw the nasal mucosa into relief.

Upon examining the recessus frontalis in the late fetus, one finds a variable number of low

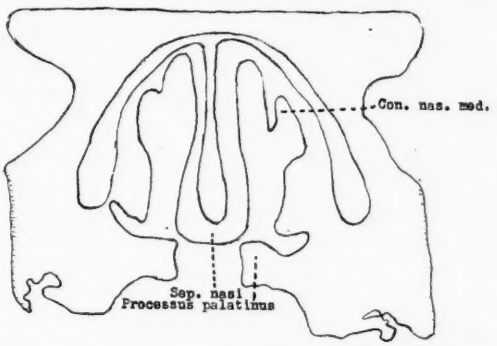


Fig. 6. Frontal section through the nasal fossae of a human embryo aged 49 days. (Embryo 12 H.) Especially note that the palatal processes have assumed a horizontal direction in anticipation of the completion of the definitive palate. Moreover, note that the nasal conchae do not have cartilage in them at this time. x28. (Schaeffer, Fig. 16)

accessory conchae on its lateral wall. The folds, with the cartilaginous skeleton now partly ossified, are at this time sufficiently developed to throw the nasal mucosa into relief. Between the folds are found pits or furrows, the positive growth or outpouching of which aids materially in making more prominent the folds. It is appropriate to speak of the latter as accessory or hidden frontal folds or conchae and the pits as frontal furrows of the middle nasal meatus.

In some instances, therefore, the recessus frontalis remains a simple blind outgrowth from the middle nasal meatus without configuration of its lateral wall.

The processus uncinatus and the folds com-

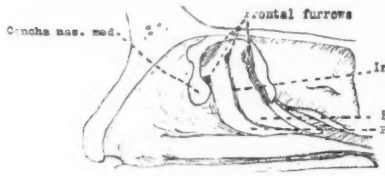


Fig. 7. A dissection of the frontal recess of a term fetus showing the early frontal furrows; e. g., rudiments of anterior ethmoidal cells and potential rudiments of the frontal sinus. Particularly, note the relations of the infundibulum ethmoidale. x1.5 (Schaeffer, Fig. 36)

posing the bulla ethmoidalis should likewise, as previously stated, be considered accessory conchae of the middle nasal meatus, and the infundibulum ethmoidale and the suprabullar furrow as accessory meatuses or furrows of the middle nasal meatus.

The frontal furrows or pits early evaginate and form certain of the anterior group of ethmoidal cells or the so-called frontal cells. When the latter cells are followed in serial sections toward the recessus frontalis, they are shown to be extensions or outpouchings of the frontal furrows and in communications with the recess. Some of the ethmoidal cells having their genesis in frontal pits remain diminutive and ethmoidal in topography, while others grow to considerable

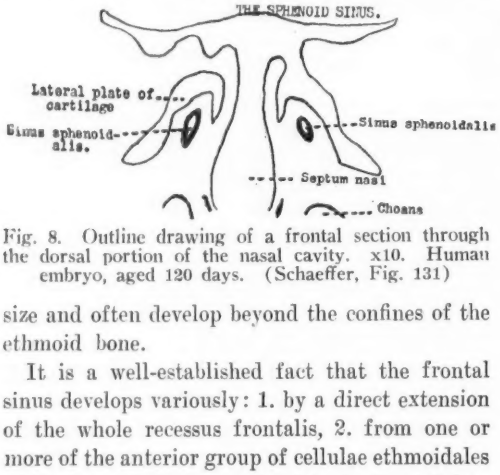


Fig. 8. Outline drawing of a frontal section through the dorsal portion of the nasal cavity. x10. Human embryo, aged 120 days. (Schaeffer, Fig. 131)

size and often develop beyond the confines of the ethmoid bone.

It is a well-established fact that the frontal sinus develops variously: 1. by a direct extension of the whole recessus frontalis, 2. from one or more of the anterior group of cellulae ethmoidales which have their point of origin in frontal furrows, and 3. occasionally from the ventral extremity of the infundibulum ethmoidale, either by direct extension or from one of its cellular outgrowths. Indeed, the frontal sinus is frequently unilaterally or bilaterally present in duplicate or triplicate, indicating a genesis from more than one of the aforementioned areas. The frontal sinus is, embryologically speaking, in many instances, an anterior ethmoidal cell which has grown sufficiently far into the frontal region to be topographically a frontal sinus.

In a general way one may say that when the frontal sinus develops from an anterior ethmoidal cell, the adult cavity will more frequently have a nasofrontal duct—the tortuosity of the

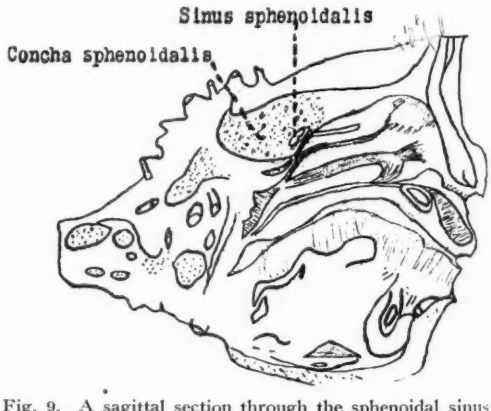


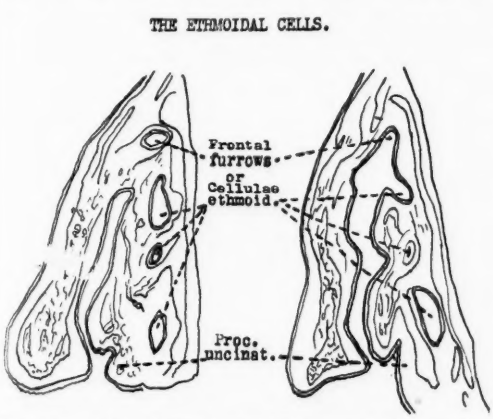
Fig. 9. A sagittal section through the sphenoidal sinus of a child aged 18 months. Particularly note that the phenoidal sinus does not occupy any portion of the sphenoid bone proper at this age, but is distinctly related to the sphenoidal conchae. x0.9. (Schaeffer, Fig. 132)

duct depending upon the cell from which the sinus developed and upon the degree of development and disposition of the neighboring anterior ethmoidal cells. On the other hand, when the frontal sinus develops by a direct extension of the frontal recess there will in all likelihood be no true nasofrontal duct.

The sphenoid sinus primarily arises in relation with the posterior cupola or dome of the cartilaginous nasal capsule and is demonstrable as early as the 4th month of foetal life. The cupola shaped recess or terminal nasal sinus is poorly developed in man, yet is strictly speaking the primitive sphenoidal sinus. The wall of the terminal sinus gives the foundation for the sphenoidal conchae. (Ossiculum Bertini.) The actual bone arises through ossification which begins in the 5th month of foetal life as two primary and several secondary centers.

It must be clearly understood that no portion

of the fetal sphenoidal sinus is contained within the sphenoid bone. It is necessary that resorption of the intervening nasal capsule take place before the terminal nasal sinus (early sphenoid-sinus) can come into actual contact with the



Figs. 10, a-b. Frontal sections through the frontal recess of a 7-month fetus. Section Fig. 10a is farther ventral than is section Fig. 10b. (Schaeffer, Figs. 147-148) Note the blind ventral extremities of the frontal furrows in section Fig. 10a. Strictly speaking these are early cellulae ethmoidales anterior. In section Fig. 10b, some of the furrows or cells are shown to be in free communication with the frontal recess. Any one of these cells may develop sufficiently far to become the frontal sinus.

body of the sphenoid-bone. Such resorption does occur subsequently. Therefore, the foetal sphenoidal sinus is a constricted portion of the nasal fossa. The proximal end of the constriction remains as the ostium of the sinus and is always located cephalic to the highest nasal conchae that may be present in the particular case.

The average sphenoidal sinus of the term foetus has a capacity of 6-8 cubic m.m., measuring approximately 2x2x1.5 mm. The ostium sphenoidale varies in diameter from 0.5 to 1.5 mm.

The Ethmoid Sinuses

The ethmoidal cells are primarily extensions or evaginations of the nasal mucosa from the middle, superior and first supreme nasal meatuses; e. g., from the meatuses directly or from the accessory furrows and recesses which configure their lateral walls, particularly the lateral walls of the middle and superior meatuses.

The initial ethmoidal outpouchings are in evidence as early as the 4th month of foetal life. For some time the surfaces of the mucous membrane sacs are in many cases in contact and the lumina in a sense merely potential. Again the early sacs may be mere dimple like depressions.

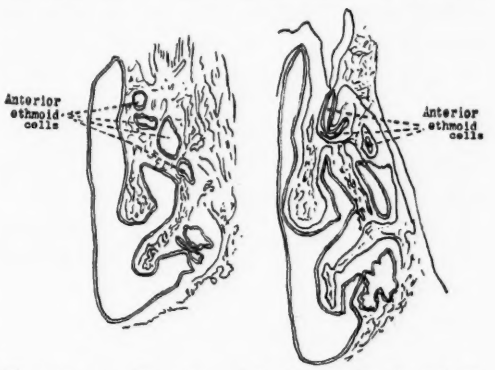
However, by the seventh month the evaginations have taken shape in the form of hollow tubular-like, blindly ending sacs, with ostia in communication with the points of initial outgrowth. These tubular sacs may now be called ethmoidal cells.

Horizontal sections of the nose of the term foetus show the ethmoidal cells considerably developed, the anterior group measuring on the average 5x2x3 mm. The posterior group measures 5x4x2 mm.

Resume

As a matter of resumé let us say first that the maxillary sinus primitively is an evagination of the mucous membrane of the floor or lateral wall of the infundibulum ethmoidale.

Second, the frontal sinus develops either by a direct extension of the whole recessus frontalis or from one or more of the anterior group of



Figs. 11, a-b. Drawings of frontal section through the left nasal fossa in the region of the frontal recess. Note the early frontal furrows, rudiments of anterior ethmoidal cells. Fig. 11a, from a term fetus, series D, slide 4; Fig. 11b, from a 7-month fetus, series B, slide 31. (Schaeffer, Figs. 149-150)

the ethmoidal cells or occasionally from the ventral extremity of the infundibulum ethmoidale.

Third, the sphenoid sinus arises in relation to the posterior cupola of the cartilaginous nasal capsule and is merely a constricted portion of the nasal fossa.

Lastly, the ethmoidal cells are primarily evaginations from the middle, superior and supreme nasal meati.

DISCUSSION

Dr. O. M. Steffenson, Chicago: The elongation of the face results in a separation of the shoulder of the

inferior turbinate from the lower orbito-ethmoid junction.

The inferior turbinate shoulder retains its connection with the ethmoid capsule and the orbital wall by several elongated portions of bone. The largest and most definite of these is the uncinate process. In front of the uncinate a spicule of bone unites the shoulder of the inferior turbinate to the base of the lacrimal bone and behind the uncinate the break between that bone and the palatal bone is again bridged by a descending sheet of bony connection.

The space between the orbit and ethmoid is filled by an almost smooth and continuous bony curtain of variable width pierced by the inlet to the antrum.

Other specimens show considerable pneumatization of the bony connection between the orbit, the ethmoid capsule and the turbinate shoulder. This formation presents an independent system of cells occupying the internal orbito-ethmoid angle. The extent of this pneumatization is also variable and one may find from two up to a half dozen distinct cells of this variety.

The morphology of this region is of particular interest to those who wish to puncture the antrum near the site of the natural opening. Neglect or failure to recognize the supra-antral cells when they are infected in the course of a general ethmoid involvement is often the cause of failure to obtain a satisfactory result with the sinus exenteration. An attempt to puncture the antrum near the natural opening in a case of deficient development would drive the instrument into the orbital cavity.

Excessive pneumatization in the posterior part of the ethmo-orbital connection encroaches on the sphenopalatine foramen and may convert the entrance of this orifice into a tortuous canal which may be difficult or impossible to follow.

The author's presentation of the two different origins of the frontal sinus is of signal value to the surgical procedures in that region. It clarifies at once the moot question of the position of the frontal duct. If the sinus arises from the frontal depression the position of the duct will be anterior and the access to the frontal sinus will be wide. In case the frontal sinus originates from an anterior ethmoid cell the duct will be placed posterior; difficult of access with a thick bony anterior wall.

THE VALUE OF X-RAY THERAPY IN MALIGNANT DISEASE*

CASSIE B. ROSE, M. D.

CHICAGO

For the relief of human suffering, both mental and physical, the use of x-ray and radium has given to medical science a long forward step in the treatment of malignant disease. Radiation, if used early and in sufficient amount, produces a cure in 95 per cent. of the skin cancers. Statistics show that the combination of surgery with radiation gives about 30 per cent. better results in most neoplasms than surgery alone. For the inoperable or recurrent cases radiation gives more help than any other form of treatment. The latter group will be considered in this paper.

Remarkable palliation of a malignant process is often obtained by moderate frequently repeated doses of x-ray therapy, such as can be given with the apparatus now available in most x-ray laboratories and, as a rule, with very little roentgen sickness. If practicing physicians, and perhaps some roentgenologists, better understood this use of x-ray, no doubt more patients would receive its benefit.

The following routine treatment doses are used in the x-ray department in the Presbyterian Hospital of Chicago: For carcinoma of the breast, carcinoma or sarcoma of the bone, and all abdominal or thoracic neoplasms, 5MA, 140 KVP, ¼ mm. copper, and 1 mm. aluminum filter, 10 inch skin target distance, time 10 minutes, covering a square area fifteen cm. in diameter. This dosage gives thirty-five r per minute. For superficial glands or those lesions easily susceptible to x-ray, 130 KVP, and 4 mm. aluminum filter is substituted in the above dosage, all other factors remaining the same.

This dosage is varied to suit the clinical condition of the individual patient, by decreasing either the time duration of the treatment, the size of the area rayed, or the frequency with which treatments are given. No other factors are altered. Routinely one area is rayed at each treatment, and two or three treatments a week are given, directed from various angles toward the lesion, returning to the same area not oftener than once in two weeks, nor more than three times without a rest interval of six weeks to two months. Two or three such series may be given, often with longer rest periods or less frequent treatments in the later series. If the patient is comfortable and the lesion under control, treatment may be stopped. Always, however, patients are asked to return at frequent intervals for re-examination and in case of recurrence the treatment is resumed.

Glucose, either intravenously or orally, in some cases in conjunction with calcium lactate, was given to a few of the patients with bone

*Read before the Section on Radiology of the Illinois State Medical Society, May 7, 1931, East St. Louis.

lesions. Although in some instances it seemed to help, its therapeutic value might be questioned because some equally good results were obtained by x-ray alone.

Hodgkin's disease and others of the malignant lymphoma group, whether in the superficial or deep lymph glands, are usually quickly relieved by x-ray. Unfortunately, there is not often a permanent cure, and with each recurrence the x-ray effect is less satisfactory.

For example: Mr. H. W., aged fifty-nine years, after three spontaneous remissions of enlarged cervical glands, came, in November, 1917, with enlargement of all of the superficial glands, the liver and spleen, normal leukocytes, a variable temperature between subnormal and 103°, rapidly decreasing hemoglobin from fifty-six to thirty per cent., marked loss in weight and great weakness so that the patient seemed in extremis. X-ray treatments of three minutes every other day were given at first because of his poor condition, gradually increasing to seven minutes as the patient improved. Within two months the glandular enlargement had disappeared, the temperature was normal and the patient had gained five pounds. A less severe recurrence in February, 1918, was treated intermittently until May, at which time the patient seemed well except for slight loss of strength.

Not until fifteen months later, July, 1920, did he return with a slight recurrence of symptoms. He stated that in the interim he weighed more and felt better than ever before in his life and worked every day. On examination a nodular mass was palpable in the middle abdomen, the liver and spleen were large, but no superficial lymph glands were palpable. The patient did not respond to x-ray as before. Instead, he grew rapidly weaker, became somewhat confused mentally, and died within a month.

The striking finding at postmortem was the marked hyper-plasia and soft hemmorhagic appearance of all the lymph glands and the spleen. X-ray surely helped this man and probably gave him over a year of life which he otherwise would not have had. His history is quite typical. The next two are not so common.

Mr. R. S., aged thirty years, came with cyanosis of head and thorax, dilatation of superficial veins of the chest, dyspnea, hoarseness and loss in weight. This condition had been progressively increasing for a year and was evidently due to pressure from a mass in the mediastinum. X-ray (Figure 1a) showed this mass as a dense, sharply defined, supracardiac shadow, nodular in outline, eighteen cm. in transverse diameter. It bulged into the posterior mediastinum and did not pulsate. A diagnosis of mediastinal tumor, probably lymphosarcoma, seemed the most likely. After three x-ray treatments the supracardiac shadow had reduced from eighteen to twelve cm. in transverse diameter (Figure 1b), and after five more treatments to 9½ cm. and the patient was clinically well. Up to the present, now eight years, he has remained perfectly well, and chest films taken at six-month intervals have all been normal.

Fig. 1 A. Fig. 1 B.

Fig. 1 A, B. Mediastinal tumor, reduced from 18 to 12 cm. in width after three X-ray treatments. Films taken at 36-inch distance.

Mrs. N. S., aged fifty-three years, in November, 1921, complained of her third paroxysmal attack of sharp sticking pain in both arms and the left leg, asso-

ciated with precordial distress and dull aching pain in the left shoulder and on the left side of neck. The patient was pale, weak and had lost thirty pounds in weight in the last six months. Superficial lymph glands and abdominal masses were palpable, the largest of which was twenty cm. in diameter. A left sided pleural effusion on aspiration yielded 1300 cc. of light yellowish-gray, opalescent, non-odorous fluid. It had a specific gravity of 1018, contained 2100 leukocytes per mm., predominately lymphocytes, and many small fat globules. No micro-organisms were found. The most probable diagnosis seemed to be lymphosarcoma with glands pressing on the thoracic duct, thus producing the chylous effusion.

Between November and March this patient received thirteen x-ray treatments. Reactions occurred, particularly after the fourth and fifth treatments, consisting of a severe chill and temperature of 102°, with nausea and weakness which continued until the next day. A second aspiration in January yielded 850 cc. of chylous fluid similar to the first except for the absence of leukocytes. Some fluid recurred later but was not aspirated. The palpable glands gradually diminished, the patient recovered her normal health, and has remained well to the present time, now ten years.

These last two patients were exceedingly fortunate in receiving so much and such lasting help from x-ray therapy.

Leukemic patients respond to x-ray in much the same manner as those of the lymphoma group. The white count drops, the spleen decreases in size, and their strength returns. Then come recurrences which respond to x-ray less and less readily. One case will suffice to illustrate.

Mrs. A. Z., aged thirty-six years, in April, 1917, had a leukocyte count of 350,000 with many myelocytes, a hemoglobin of thirty-eight per cent., a liver and spleen which filled the abdomen to the size of a nine months pregnancy, and was so weak that she needed help in walking. It seemed a hopeless situation, and yet, x-ray *might* help.

The spleen was divided into six areas, one of which was rayed at each treatment, three times per week, three to five minutes, later increasing to ten minutes. Blood counts at frequent intervals were used as a guide to treatment. The white count gradually decreased, reaching 10,000 in February, 1918, the hemoglobin rose to seventy-eight per cent., the liver and spleen decreased to half the previous size, and the patient recovered her strength so much that she was able to keep house, including the family washing, for a family of seven, for a period of a year. In January, 1919, for the first time, she failed to keep her treatment appointment. She had died after an illness of four days, only three of which she was confined to bed. Surely x-ray added more than a year of life for this patient whose condition seemed so precarious when the treatment was first started.

Fig. 2 A. Fig. 2 B.

Fig. 2 A, B. Bone destruction in the left ischium and inferior ramus of pubis from a small round celled sarcoma, and bone regeneration after x-ray treatment, Patient living and well eight years to date.

Malignant neoplasms of bladder, prostate or kidney, are often remarkably benefited by radiation therapy, either alone or in conjunction with operation. In some instances of bladder or prostatic carcinoma, suprapubic drainage or an in-

Fig. 3 A. Fig. 3 B.

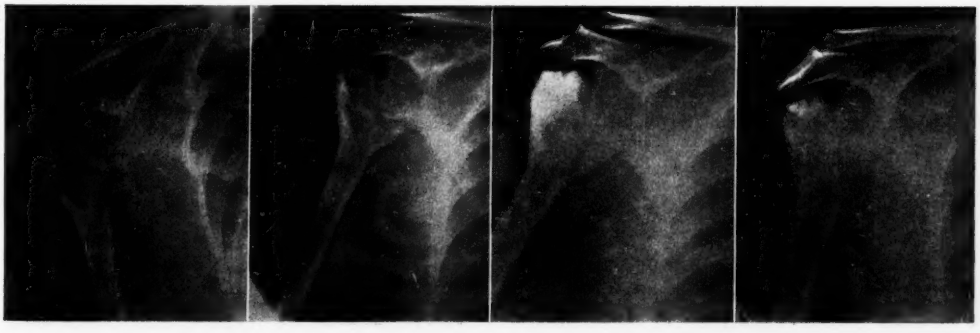
Fig. 3 A, B. Tumor destruction 5 cm. in diameter in the lower part of sacrum, with bone regeneration after x-ray treatment. Patient well after 15 months.

dwelling catheter may be indefinitely postponed or avoided.

Mr. E. G., aged seventy years, had signs of prostatic enlargement, considerable urinary bleeding, pain in the lower abdomen, and loss of weight and strength. X-ray treatment was directed toward the prostate, from front, back, each groin and through the perineum, one area at each treatment, for ten minutes, bi-weekly at first, and once a week as the patient improved. Within two months, after only six treatments, the bleeding stopped. It recurred two weeks later. Four treatments stopped it again. Twice since there has been slight bleeding for a day or so, each time stopped by a single treatment. Subsequently radium needles inserted through the perineum into the prostate, further reduced its size. It is now one and one-half years since the first x-ray treatment. The patient says he feels as well as he ever did, and is having no urinary distress. He certainly looks well and has not been operated on.

Mr. E. H., aged five-five years, came because of pain in the right side and urinary bleeding. After careful study, including pyelograms, a kidney tumor was diagnosed. Carcinoma was found, so necrotic that it could be scooped out with the hand, but could not be entirely removed.

Three series of twelve x-ray treatments each were given during the next ten months, directed anteriorly, posteriorly and laterally to the right kidney region, one area at each treatment, and two treatments per week. The patient entirely recovered his strength, gained fifty pounds in weight, and resumed his work. Not until two years later did a recurrence appear. Then a large mass developed in the lower abdomen causing partial intestinal obstruction and the patient died after about three months. Since this tumor could not be



A B C D

Fig. 4 A. Bone destruction in the head of humerus, metastatic from breast carcinoma. B. C. D. Progressive stages of bone regeneration following x-ray treatment.

entirely removed it seems hardly probable that the patient could have been well for so long a time without the help of x-ray.

Breast carcinoma, postoperatively should be followed by one or two series of x-ray treatments as a prophylactic measure. For inoperable and

Fig. 5. Bone destruction of acetabulum and sacrum from metastasis from breast carcinoma. There was also destruction of five vertebrae, and several ribs.

recurrent cases nothing else offers so much help for the patient. Even large ulcerating lesions can often be made to heal.

Mrs. M. C., aged fifty-six years, had a large ulcerative carcinoma of the left breast, measuring eight by ten cm., which discharged much foul smelling pus. There had been no previous operation or other treatment.

After fourteen x-ray treatments, four of which were unfiltered, the ulcer entirely healed. After four and one-half months the patient returned with enlargement of the supraclavicular and axillary glands, and swelling of the left arm, but the old ulcer was still healed, and showed no sign of breaking down.

Primary malignant lesions in bone sometimes respond surprisingly well to x-ray treatment. If osteolytic in type, recalcification may occur. If osteoplastic, there may be no apparent change, or the calcification may increase. In either case there is remarkable improvement in the patient's clinical condition.

Mrs. A. G., aged fifty-six years, came in June, 1923, with pain in the region of the left hip, so severe that she had been unable to walk or to lie on the left side for six months. A large, hard vaginal mass was palpable, firmly attached to bone. An x-ray film (Figure 2a) showed an irregular, "moth-eaten" area of bone destruction in the left ischium and inferior ramus of the pubis. A microscopic section showed a small round celled sarcoma. Radium needles were inserted into the tumor twice, a total of 1500 milligram hours. In addition, four series of eight x-ray treatments each were given. Gradually the tumor disappeared. Within two months recalcification of bone in the involved area was visible, in three months it was well marked, and soon

Fig. 6 A

Fig. 6 B.

Fig. 6, A, B. Shows recalcification of bone after x-ray treatment.

after became more dense than the normal side. (Figure 2b.)

Once, in 1930, the patient had a little pain in this region, but no evidence of recurrence could be found on palpation or by x-ray. However, seven x-ray treatments were given as a prophylactic measure. She had no further trouble, and is still living and well—an eight-year cure of a sarcoma by radiation.

Mrs. G. M., aged 22 years, developed pain in the pelvis, radiating to the legs. It started insidiously and within six months was so severe that she was bedridden, and depending on opiates for relief. A large, hard, smooth mass was palpable in the posterior vaginal vault, firmly attached to bone. X-ray film (Figure 3a), showed a rounded area of bone destruction, five centimeters in diameter, in the lower left aspect of the sacrum. No microscopic study was made, and no radium inserted. X-ray therapy was begun February 17, 1930, and within three months the patient was free from pain and able to go for short walks. Now, fifteen months later, she is able to live her normal life, and frequently plays eighteen holes of golf. X-ray films have shown a progressive increase in bone density in the involved area, which is now more dense than normal (Figure 3b). Is this a cured sarcoma?

An x-ray film (Figure 4a) showed a destruction of the head of the left humerus, undoubtedly a metastasis. X-ray treatments were given to the left shoulder, through four portals, one area for ten minutes at each treatment, three treatments per week at first, once a week in the second series, and after that intermittently. After two months of treatment there was some calcification in the involved area, and later films showed increasing sclerosis (Figure 4b, c, d). The pain disappeared, and the patient could use her arm normally, such as drive her car, can fruit and sweep the floor. She could not hold her arm straight above her head.

This good result continued two and one-half years, until February, 1927. In the following summer the patient became lame and suffered from fleeting pains in various parts of the body. In October films showed multiple metastases to many bones. Some recalcification occurred after further x-ray therapy, but the result was not as satisfactory as before. A pathological fracture occurred in the humerus, just below the old area of sclerosis. Although this patient slept well, retained her appetite and was for the most part fairly comfortable, she gradually lost ground and died February, 1929—eleven years after her breast removal, and four and one-half years after the metastasis was found in the left humerus. Surely x-ray gave her usefulness and comfort, instead of pain and disability.

Fig. 7. Area of metastatic destruction in the skull, which partly regenerated after treatment, but later extended to other areas.

Metastatic lesions in bone, whether arising from carcinoma of the breast, prostate or other source, are often remarkably palliated by x-ray therapy, with recalcification of bone in the areas of tumor destruction. Two examples will suffice.

Mrs. G. T., aged forty-two years, in October, 1924, six years after right breast removal, complained of severe pain in the left arm and shoulder, and inability to raise the arm without the help of the other hand.

Mrs. C. D., two years after left breast removal, at the age of thirty-six years, was delivered of a full term baby, in June, 1928. In the latter part of the pregnancy she was unable to walk because of severe pain in the pelvis and legs, which was interpreted as pressure pain. Instead of disappearing after the delivery, it grew progressively worse. The patient became

unable to turn in bed without help and then only with excruciating pain. Even the slightest jar caused pain. Opiates gave only partial relief.

X-ray films in July (Figure 5) showed bone destruction of the left side of the sacrum, the right acetabulum and five vertebrae, erosion with fracture of two ribs, and many other small areas of rib involvement. In August, 1928, x-ray therapy was begun. Rapid relief of pain and calcification in the areas of bone destruction followed. In October she was comfortable. In March, 1929 (Figure 6a, b), she walked with a cane, a few weeks later the cane was discarded, and she was able to live her normal life. In January, 1930, she took a seventy-mile automobile ride without discomfort. Films at this time showed such complete regeneration of bone that the old areas of destruction were difficult to visualize.

Carcinoma appeared in the other breast, and in many skin nodules, there were bone metastases to the skull (Figure 7), and the old areas became less densely calcified (Figure 8). In July she walked less easily and had considerable nausea and vomiting. In October, 1930, she died. During the last few weeks her pain was easily controlled by aspirin, never more than four tablets in twenty-four hours, and she had only one dose of morphine, given the day before she died. She never lost her morale. She had two full years of comfortable and useful life, for which x-ray should be credited.

The time is too short to cover all of the malignant conditions in which x-ray therapy is of value. Because clinicians in general, and many roentgenologists, seem to take a hopeless attitude toward malignant disease, and particularly toward metastatic lesions in bone, I am presenting these cases as examples of what may be expected from x-ray therapy, with the plea that these unfortunate sufferers be given this, the greatest boon that we have to offer, until medi-

Fig 8, A, B. Shows some loss in calcification six months before the patient died, although not as marked as before the x-ray treatment was started.

cine shall have found a real cure for this dread disease, a part of which may be x-ray.

DISCUSSION

Dr. I. S. Trostler, Chicago: Dr. Rose is to be congratulated upon the results she secured in these advanced cases. The most important thing, I think, is that we should try to give what relief we can even to what appears to us to be the most hopeless cases.

One of the important things about Dr. Rose and her work is that she is, first, a physician and doctor, and, second a radiologist. If more of us would remember that we are doctors first and x-ray specialists later, we would also be able to do the good work she is doing.

THE TREATMENT OF ARTHRITIS BY SUSTAINED FEVER THERAPY* A PRELIMINARY REPORT OF SIX CASES

D. E. MARKSON, M. D., F. A. C. P., and
S. L. OSBORNE, B. P. E.
CHICAGO

Hyperthermia induced by diathermy has already been used in the treatment of paresis,[1] and in asthma[2] in the Northwestern University Neurological and Asthma Clinics respectively with excellent clinical results. Its use in the treatment of arthritis, as far as we have been able to survey the literature, has not been given a trial. The purpose of this paper is to give a preliminary report of six cases of chronic infectious arthritis treated by this method and the responses to this type of therapy. These patients had been extremely resistant to all forms of management over periods of from one to three years.

An attempt was made at the Northwestern University Arthritic Clinic to compare the clinical therapeutic results of various agents used in the treatment of arthritis—autogenous vaccines, non-specific proteins, vaccines, and desensitizing agents. In this group was included typhoid, mirion, autogenous vaccines, Crowe's vaccine, Small's soluble antigen and mixed vaccines. It occurred to us that only in the group where fever was produced did any definite benefit result.

This comparatively new method of producing hyperthermia suggested a means of testing the accuracy of this observation as we could control the temperature to produce any type of curve we desired. At first we attempted to produce curves simulating the non-specific curves of vaccine therapy, that is, short curves rising to 103 to 104 degrees Fahrenheit and descending over three to five hours to normal temperatures. These short curves, similar to that illustrated in Chart 1, showed no striking results. Thinking that a sustained temperature of 103 to 104 degrees Fahrenheit might be productive of better results, a new type of curve was evolved. Such a curve is well illustrated in Chart 2.

We arbitrarily chose eight treatments to constitute one course, these to be given bi-weekly. However, after a trial, it seemed to us that this was too exhausting on the patient, and so the frequency of treatments was changed to one a week. This latter method has proved quite satisfactory and is being employed at the present time. Each of the six patients reported in Table 1 was given a course of eight weekly treatments. Eight other patients were given one to six treatments but are not included in this report.

TECHNIQUE

Bed Preparation.—The prevention of heat loss is an important factor in this method of treatment. It is quite essential that strict attention be given to the preparation of the bed with this objective in mind.

First, a woolen blanket is spread over the mattress, then a full length rubber sheet, and finally, another woolen blanket. A bath blanket instead of the usual bed sheet covers these and is snugly tucked in to prevent rucking by restless movements of the patient. A rubber sheet is placed over the pillow, followed by a blanket, and then another bath blanket. These are placed over and around the shoulders forming a shawl effect with the rubber sheet over all. The bath blanket keeps the woolen blanket from irritating the skin. Thus, heat loss from the shoulders and neck is reduced to a minimum. A bath blanket, a woolen blanket, a full length rubber sheet, and a woolen blanket in successive order covers the patient and each carefully tucked in. These are followed by four more good blankets and insulation of the patient is as complete as possible. The successful maintenance of a sustained temperature is dependent upon these essential details.

Electrode Application: A high frequency machine of low voltage is used, having a capacity of four thousand milliamperes. This proves an adequate and safe source of energy. A high amperage, low voltage current was selected. The entire trunk, after being anointed with a lubricating jelly, is encased between Neymann fenes-

*From the Arthritic Clinic Department of Medicine and the Department of Physical Therapy, Northwestern University Medical School.

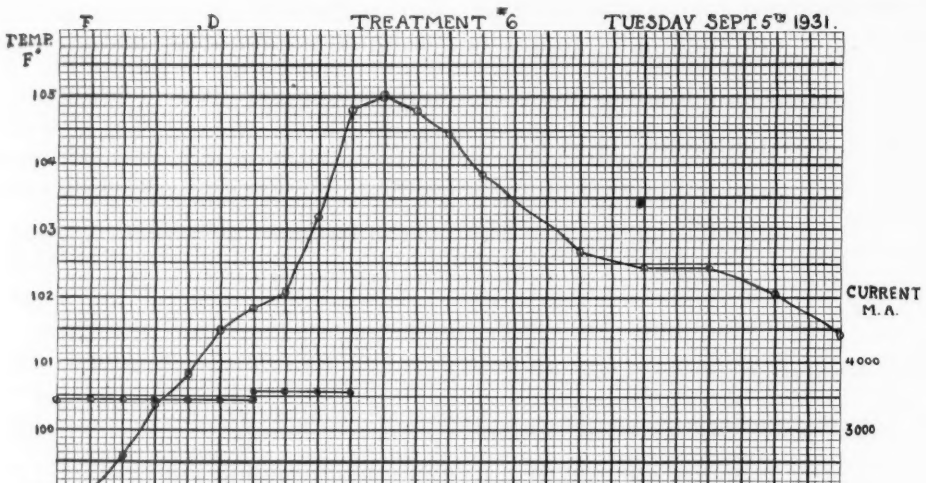


Chart 1. Fever of short duration. Poorly sustained temperature.

trated electrodes which are held in place by an especially made canvas jacket. These electrodes and jacket are made by a well known manufacturer of electrotherapeutic apparatus. The fenestration of the electrodes make the possibility of burns a remote one. We have had no burns nor discomfort from electrodes.

Temperature Curve: Our object at present is to secure a sustained temperature of 103 to 104 degrees. Varying amounts of current are necessary to do this. Patients vary a great deal. Some patients require as little as thirty-two hundred milliamperes while others need the full capacity of the machine. The time that is required to secure the temperature also varies from one to two and a half hours. The average time one requires, however, is one and three-quarter hours. We are guided by rectal temperature which is taken with a thermo-couple. We will later describe the method of calibration. Readings are taken every fifteen minutes. Patients often show marked distress when an increment of one degree is secured in fifteen minutes. This should be avoided.

The current is turned off when rectal temperature reaches 104.2 degrees. This initial temperature is usually followed by a secondary rise of from five-tenths to one and a half degrees. If there is a tendency for the temperature to drop, the current is again turned on for a few minutes. The electrodes, therefore, are not removed until one is sure that no more current is needed or that their removal does not materially influence the effectiveness of the treatment by heat loss. We submit Chart 2, which shows a typical curve. A temperature of 104 degrees or more is maintained for ten hours, and is only reduced at this point by the removal of blankets. Patients perspire profusely during treatment and they are encouraged to drink freely of water. When the rectal temperature drops to 100 degrees, a sponge bath and alcohol rub is given and the patient placed in a freshly prepared bed for the night. Next morning the patient is ready for discharge from the Hospital.

Temperature Control: Occasionally it becomes necessary to retard the secondary rise and this can often be accomplished by the application of ice packs or cold packs to the head. If this is not effective, a slight exposure of the patient while taking off the electrodes will stop the upward tendency. When neither of these meth-

ods work, then the full exposure of a leg or arm will cause a response. The ease with which temperature can be controlled is one of the distinct advantages of this method.

Diet. Breakfast on the day of treatment should consist of a very light or liquid diet. At noon the patient may be fed liquids. We usually give our patients soup, milk, coffee, or orange juice with ice (Table 2). Regular diet can be given at night although the patient should be fed by someone so as to prevent any disturbance of the blankets which might cause heat loss.

Rectal Temperature Measurement: The use of the usual clinical thermometers for recording rectal temperature means a disturbance of blankets covering the patient, thus permitting heat loss through the introduction of external air. The thermocouple method of recording temperature is used to overcome this difficulty. The thermocouple is made of copper and "ideal" wire. The hot junction, with the wires leading therefrom suitably insulated, is sealed in the conical end of a small tubular rectal electrode used for electrotherapeutic work. The cold junction is plated in a thermos bottle filled with water at room temperature. A D'Arsonval type of galvanometer of requisite sensitivity is properly connected between the hot and cold junctions. The thermocouple is calibrated before use by immersing the hot junction into a bottle of water at about 112 degrees. When the temperature of water reaches 108 degrees the beam of light is adjusted to the extreme right end of scale. Deflexion is noted for each degree fall until water reached a temperature of 97 degrees. Water temperature is determined by a standard mercurial thermometer. Temperature is plotted against deflection resulting in a straight line, and from this chart temperatures are readily computed. The hot junction is then transferred to the patient's rectum whose body temperature is to be determined. If the temperature of the cold junction changes, these changes, plus or minus are added to the reading. Over several hours some change in the temperature of the cold junction is apt to take place. It is our custom at the end of the experiment to recalibrate our thermocouple as a check. Once the galvanometer is set up it should not be disturbed or jarred. Where there is much vibration it is impossible to use the thermocouple method because the continual vibration disturbs the galvanometer calibration so that readings become unreliable.

A very interesting observation is that with some patients a definite current effect can be noted. This causes heating of the thermocouple so that a false high temperature is read. A fluctuation of the light beam back and forth of from two to three millimeters can be seen. To demonstrate this effect, turn off the current from the high frequency machine and immediately the light beam falls toward the cooling side. When the current is again abruptly turned on, the beam of light rapidly swings back.

REACTIONS OBSERVED DURING TREATMENT

Immediate Reactions.—1. Chills are particularly severe, lasting one-half hour or longer, in those patients recently given typhoid or mixed vaccines. 2. Severe throbbing bitemporal headache at a temperature of 103 degrees and continuing for four or five hours during the treatment. 3. Joint pains become severe during the early rise of temperature but disappear at the height of fever. In others, the opposite phenomenon is noticed. 4. Feeling of weakness with nausea and dizziness during the height of the curve, particularly when the fever rises more than one degree in fifteen minutes. 5. Patients become anxious and restless at the height of fever but usually quiet down as the treatment progresses. Restlessness is particularly noticeable on the night following the fever reaction. 6. The perspiration is usually profuse, limited in some cases to the upper part of the body in the first treatment, and, in subsequent treatments becomes generalized. The perspiration is usually acid at the beginning but soon becomes neutral and remains so during the entire curve. 7. The mouth temperature in many patients crosses and recrosses the rectal temperature, a phenomenon particularly noticed in arthritic cases. This can be seen in Chart 2. The normal relationship of mouth and rectal temperature reappears when the current is turned off (see Chart 2). 8. The pulse pressure increases due to a lowered diastolic pressure with systolic remaining stationary. In some cases a drop of twenty to thirty millimeters in the diastolic pressure is noted.

Later Reactions.—1. Herpes labialis occurs on the second or third day, and a severe enanthem covering the hard and soft palates as well as the

buccal membrane. A papular erythematous rash appearing at the folds of the skin also developed on a few of the patients. 2. Weakness and lassitude lasting usually one or two days. 3. The pain and stiffness in the affected joints is very much improved for three to five days following treatment. 4. Weight loss or five to six pounds is rapidly replaced. 5. The appetite becomes distinctly better.

LABORATORY DATA

Ruth E. Jung, from the laboratory of Doctor Alexander Day[3] made the following studies on patients F. D., and N. P.: Opsonic index, complement content, agglutinins, r. b. c., w. b. c. and differential counts. The blood was drawn before each treatment, at the height of the curve, and, the next morning after treatment. No maked variation from normal was noted in the opsonic index, complement content, or in the agglutinins. The leucocytes and erythrocytes showed a marked rise at the height of the curve. A relative increase in polymorphynuclear leucocytes was also noted. This work is being continued by these investigators who have already published a preliminary report.[3] The blood lactic acid run under similar conditions by Dr. Fishback of the department of pathology did not show any variations from normal at any stage of the fever curve.

The blood chemistry findings reported by Bischoff, Ulmann, Hill and Long,[4] on six normal individuals with exposures of one and one-half to three and one-half hours is, as follows: Increase of the blood plasma pH and a decrease of from four to twelve volume per cent. in the total CO_2 content of the blood; the pH of the urine remained unchanged or increased; the inorganic phosphorus unchanged or decreased, and the hemoglobin more or less highly oxygenated. They explain that the change in the total CO_2 content of the blood is readily accounted for by the shift of base to the blood proteins because of the increase in pH. The fall in the total CO_2 content may or may not signify a lowered alkali reserve, since the pH of the plasma and the oxygenation of the hemoglobin have both increased. Quantitative calculations indicated no change in the alkali reserve. In experimental work on both man and dogs, Mortimer[5] noted an increase in blood chlorides, blood calcium, uric acid and non-protein nitrogen which is accounted for by concentration of the blood. He also observed a

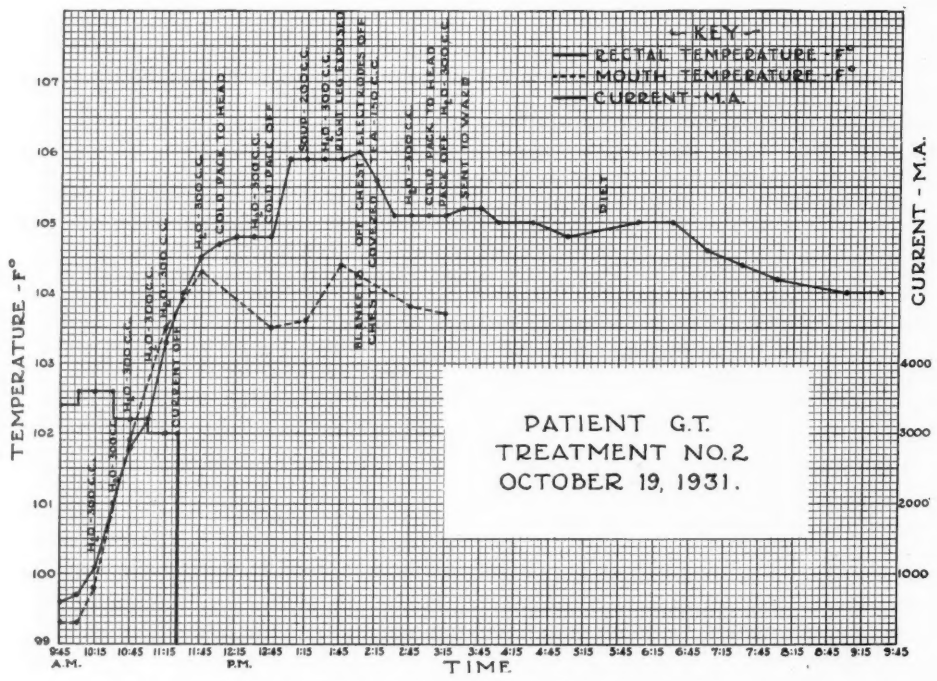


Chart 2. Fever curve of 104 F. sustained for 10 hours.

decrease in CO^2 combining power in both man and dogs.

CLINICAL RESULTS

Clinical Results: One typical case is briefly summarized: N. P., white female, age thirty-four, entered the clinic service on July 8, 1929, with the following complaints: pain and swelling in both feet and ankles, pain and swelling in fingers and wrists; constipation; weakness and nervousness; inability to walk because of severe pain in feet and ankles.

Physical examination revealed the following possible foci: chronically infected tonsils, chronic purulent sinusitis and ethmoiditis, chronic suppurative otitis media, chronic endocervicitis. Management of these conditions received proper treatment in the respective departments.

The second phalangeal articulations of both hands showed fairly well marked periarticular swelling, decreased mobility due to pain, inability to make a fist; the ankles swollen and tender, as were the tarso-metatarsal articulations; tenderness over the lumbo-sacral junction.

The laboratory data as follows: B. M. R. —2; blood chemistry, N. P. N. 26.8, urea N. 11, creatinin 1.44, uric acid, 3, sugar (glucose) 98.6, chlorides 480, ca.9, sugar tolerance slightly decreased. Blood Wassermann, negative; R. B. C. 4,360,000; W. B. C. 8,200, lymph 25, large M and trans. 3, polys 70, eosinophiles 2. Urine negative except for mucus shreds and epithelial cells; culture of ureteral catheterized specimen negative—no growth after seventy-two hours. X-ray of accessory sinuses negative; of colon, shows ileo-cecal incompetency, otherwise negative; of stomach, negative; gall bladder visualization with dye, negative; of lumbo-sacral, shows partial obliteration of the right sacro-iliac joint probably due to arthritis; of the foot and wrist, sharpening of the articular margins, suggestive of arthritic pathology.

Treatment of this case was begun in the arthritic department on August 9, 1929. The tonsils were removed, drainage of the purulent sinuses was instituted, and proper treatment of the otitis media was carried out. The gynecological department treated the endocervicitis. The management of the arthritic condition consisted of non-specific therapy, autogenous vaccine from tonsils, physiotherapy, body mechanic exercises, colon

TABLE 1

Patient	Age	Duration	Type	Joints Involved	Previous Treatment	Hyperthermia	Results
D. F.	34f	3½ yrs.	Chronic infectious	Fingers, wrists, knees, cervical spine. Partial ankylosis of left knee (fixed in partial flexion). Motion extension 160°, flexion 90°.	Removal of tonsils and infected teeth. Non-specific vaccines. Physiotherapy (radiant heat, infra red, muscle training, home physiotherapy). Orthopedic (cast to right knee). Clinic treatment 1 year.	Began April 16. Ended May 15. 8 weekly treatments.	Improved. Is able to walk in erect position. Motion in fingers and wrists markedly improved. Now able to do own housework for first time in 3 yrs.
N. P.	34f	4½ yrs.	Chronic infectious	Fingers, wrists, shoulders, knees; walks with difficulty because of pain in both ankles.	Treatment of chronic suppurative sinusitis — chronic purulent otitis media and chronic endocervicitis. Vaccines—colon diet physiotherapy management of constipation. Clinic treatment 1 year.	Began April 22. Ended May 22. 8 weekly treatments.	Markedly improved. Relief from pain and stiffness in all joints. Is now able to walk without pain and do own housework.
E. C.	34f	3 yrs.	Chronic infectious	Polyarticular. Flexion deformities of fingers of both hands and elbows. Partial ankylosis of knees, walks with cane.	Tonsillectomy. Vaccines and non-specific therapy, arsenicals, iodides. Clinic treatment 6 months.	Began May 21. Ended June 25. 8 weekly treatments.	Improved. Relief from pain. Loss of 10 lbs. wt. Able to walk without cane.
D. F.	18f	18 mos.	Chronic infectious	Wrists, elbows knees, shoulders and fusiform swelling of fingers.	Began at once with diathermy.	Began July 23. Ended Sept. 21. 8 treatments.	No improvement. Patient did not co-operate. Temperature curve not sustained.
D. B.	45m	14 mos.	Subacute infectious	Polyarticular especially the proximal interphalangeal joints 3rd and 4th fingers of left hand. Unable to work 6 months.	Tonsillectomy. Treatment of prostatitis, autogenous vaccines, physiotherapy. Clinic treatment 3 months.	Began May 20. Ended July 8. 8 treatments.	Markedly improved. All pain and stiffness entirely relieved after 4th treatment. Iritis improved after third treatment.
E. P.	31f	3 yrs.	Chronic infectious	Right wrists, ankles, knees. Difficulty in walking. Cannot straighten arms and legs.	Tonsillectomy. Vaccines, physiotherapy, body mechanic exercises. Treated 1 month in clinic.	Began June 5. Ended Aug. 17. 8 treatments.	Markedly improved. Entirely relieved of pain. Can do her own housework.

diet and palliative treatment with drugs, arsenicals, iodides, thyroid extract, vaso-dilators, cinchophen, and salicylates.

Patient improved with remissions and exascerbations for about one year. In February, 1931, symptoms returned with the same intensity as at the onset, so fever treatment was advised and began on April 22, 1931. After the fifth treatment she noted a complete relief from pain and stiffness, and has continued to improve without other treatment up to the present time.

Six cases of arthritis, five female and one male, ranging from eighteen to forty-five years of age, suffering from chronic infectious arthritis from one to four and one-half years and treated by the accepted methods with only indifferent clinical improvement, were each given sustained fever therapy as a last resort. Using the accepted criteria that one has to gauge improvement in arthritis, we have classified two cases as markedly improved, three improved, and one, as not improved. This series is obviously too small to be conclusive, and further, the time elapsed is too short to rule out psychic and other factors that may enter into temporary remissions. However, we feel it offers definite possibilities in the management of selected arthritic cases. The method is entirely without danger in our experience provided the technique is carefully carried out. The results of this form of therapy are in direct relation to the thoroughness with which the fever is sustained over a seven or eight-hour period. Poorly sustained temperatures give poor clinical results (see Chart 1). This method opens a new avenue of study into the mechanism of the non-specific reaction.

TABLE 2

Treatment No. 2 — October 19, 1931

Time	G. T. Galvan. Deflect	C. J. Temp. F°.	Rect T. C. Temp. F°.	Mouth Temp. F°.	Current M. A.	Pulse	Resp.	Remarks
A. M.								
9:45	9.0R	76.75	99.6	99.3	3400	90	16	
10:00	8.5R		99.7	99.3	3600	94	16	H_2O 300 c.c.
10:15	7.0R		100.1	99.8	3600			Sweat slightly Acid,
10:30	3.0R		101.0		3600	110	16	H_2O 300 c.c.
10:45	0	76.8	101.8	101.9	3200			H_2O 250 c.c.
11:00	2.0L		102.2		3200	122	16	H_2O 300 c.c. Sweat Neut.
11:15	6.5L		103.3	103.5	3000			
11:30	9.0L		104.0		Off 11:25	124	24	H_2O 100 c.c.
11:45	11.5L		104.5	104.3				H_2O 300 c.c.
P. M.								
12:00	12.0L	76.9	104.7			120	20	Cold pack to head.
12:15	12.5L		104.8	103.9				Cold pack to head.
12:30	12.5L		104.8			118	20	Cold pack to head, H_2O 300 c.c.
12:45	12.5L		104.8	103.5				Cold pack to head off.
1:00	13.5L	77.0	105.9			114	26	Gal. Recalibrated.
1:15	13.5L		105.9	103.6				Soup 200 c.c.
1:30	13.5L		105.9			120	18	H_2O 300 c.c.
1:45	13.5L		105.9	104.4				R. Lower Leg and Hand Exposed.
2:00	14.0L		106.0			120	26	Electrodes off, Blankets back.
2:15	12.5L		105.6					Covered again.
2:30	10.5L		105.1			128	22	H_2O 300 c.c.
2:45	10.5L		105.1	103.8				Cold pack to head.
3:00	10.5L		105.1			128	20	H_2O 300 c.c. Pack off.
3:15	10.5L	77.2	105.1	103.7				
3:30	11.0L		105.2			124	20	Returned to Ward.
3:45	11.0L		105.2					
4:00			105.0					
4:30			105.0					
5:00			104.8					Diet.
5:30								
6:00			105.0					
6:30			105.0					
7:00			104.6					
7:30			104.4					
8:00			104.2					
9:00			104.0					
9:30			104.0					
10:00			103.7					
10:30			102.8					Part of Blankets Off.
11:00			102.4					
11:30			101.4					
A. M.								
12:00			100.4					Sponge Bath, Alcohol Rub.

CONCLUSIONS

1. Sustained fever therapy in the treatment of refractory cases of arthritis is definitely established as a valuable agent in the management of this disease.

2. A well sustained temperature over periods of seven to eight hours is necessary to insure good results.

3. The method is without danger provided the technique is carefully carried out as outlined.

4. The preliminary report is intended to stimulate an interest in this type of therapy.

We are indebted to Dr. J. S. Coulter for invaluable assistance in this problem. We also wish to thank the nursing staff of Passavant Memorial Hospital for their helpful cooperation.

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THE ROENTGEN EXAMINATION*

EDWARD H. SKINNER, M. D.

KANSAS CITY, MO.

Would that I could measure up to the hopes and ambitions of my radiologic colleagues in accepting this most honorable assignment of representing them before this admirable general assemblage of the organized medical profession of Illinois.

The subject chosen, "The Roentgen Examination," has been my daily life for a quarter of a century. I have witnessed this invisible x-ray strike upon the shining armor of clinical diagnosis, seen it stopped by the mental opacity of those who clung tenaciously to their prejudices, participated in the penetrating victory of the qualified radiological examination.

One wonders whether the victory of the x-ray has been worth the effort? Undoubtedly we are ready to agree that the roentgen examination with qualified interpretation has positive values in reaching a clinical diagnosis and that it has negative values in establishing normality. We are now able to produce such beautiful roentgenograms with such alarming ease that we are about to lull ourselves in a false sense of security. The manufacturer points such a picture of profit and trains your technician while you wait; while you glory in the beautiful exhibits that emerge from your new dark room. You patronizingly exhibit the fluoroscope to your gaping patients and imitate Little Jack Horner with amazing likeness.

Prosperity has placed more roentgen apparatus in hospital and office than the profession can assimilate and use intelligently. The distribution of x-ray apparatus far exceeds the distribution of the knowledge of roentgen interpretation. No other field of medical advancement has spent such huge sums in equipment. There is no doubt but that the profession and the hospital has been oversold in the matter of beautiful x-ray plates. And how they do please the public! How they thrill to the barium filled colon and its appendage, the appendicular semi-colon! How easily they appreciate what they know nothing about! In no other department of medicine, surgery or hospital equipment has there been such magnificent apparatus. Three huge and leading trusts now dominate this field. They have crushed the pioneers into office executives and traveling salesmen. They have promoted the technician almost into the ranks of a qualified diagnostician.

The manufacturers demand and extort greater profit for the patents of tubes, transformer apparatus and film supplies and do this with such grace and magnanimity that even the radiologist has been fooled in the process. Their service journals and technical propaganda has almost a religious tone with its sanctimonious utterances. Their glorification of the technician is hypocritical, and you and I must pay the penalty of our folly in listening to these pharasaical promptings. Ah! The perils of magnanimity!

There have been no restrictions whatever to the sale of x-ray apparatus. The public has fondly believed that the possessor of x-ray apparatus was likewise the possessor of sufficient

*Read before the Joint Meeting of Illinois State Medical Society, May 5, 1931, at East St. Louis.

knowledge to know what he was looking at in the x-ray film. There have probably been more operations and profitable fees seen through an x-ray film than actual interpretation of the shadow values upon it.

The value of an x-ray examination depends entirely upon the amount of interpretative knowledge applied to the shadows. The spectacular qualities of x-ray exhibits before patients have prostituted their clinical values and have subordinated technique to intelligent interpretation. Can anyone say that the field of roentgenology has been sufficiently investigated in a quarter of a century and that there is no further use for roentgen specialists? Is it possible to absorb this new specialty into mere office and hospital equipment when every year, month and day is providing advancements peculiar to the specialty?

I maintain that there is not sufficient knowledge of the science and art of radiology among surgeons and physicians to appreciate and measure its values or conduct. Now can we develop radiologists if we deny them opportunity? With the tremendous competition in medicine will any one choose to participate in any field of medical effort that does not provide future possibilities and a chance to reward ambition and industry? Therefore, I would conjure you to encourage, patronize and reward these physicians who have diligently applied themselves to the study of a worthy specialty. The arguments would carry retributive justice to those who take advantage of their patients by sending them to commercial laboratories and hospitals who do not maintain qualified radiologists with consultative ability. Clinical diagnosis is not machine made and competent radiology depends upon the amount of brains applied to exposure and film and fluoroscopic image.

Furthermore, it can be effectively argued that our patients are being fooled and hoodwinked by many physicians and surgeons, who impress patients with x-ray apparatus in their own offices without benefit of competent radiologic interpretation. Surely such misrepresentation of competency is bound to come to grief and discredit. People demand the right to judge values in medicine as well as merchandise. The glamor of an x-ray examination is giving way to a true estimate of its values. The basic costs of x-ray examinations are identical but the results are what determine values. The fees for x-ray examinations have not been scaled to competency in interpretation. Interpretation of clinical value to the patient is far and beyond the mere technical x-ray plate. It was one of the patriots that Illinois developed who offered observation that you could fool all the people part of the time and part of the people all the time, but never all the people all the time.

Another phase of debatable custom today is the tendency of hospitals to profit largely through their x-ray departments by reaching out for out-patient radiologic practice and by placing the radiologist upon a salary while the fees are maintained at the level of private consulting radiologists, the hospital appropriating the profits. This is eminently unfair to the practice of medicine and to the development of competent radiologists for the future. You cannot stifle opportunity or ambition or individualism and expect satisfaction today, or progress in the future. These very hospitals are penalizing the practice of medicine, they are sacrificing the socialization of medicine beyond redemption unless these pernicious practices are abated.

There is no question but that the hospital must participate in the income from the x-ray laboratory to provide equipment, maintenance, floor space rental, and all basic expenses. Beyond this any profits are a rebate by the radiologist or the practice of medicine by a hospital corporation. If this scheme of socialization continues in hospital management how long will it take to absorb other specialties and eventually the practice of medicine and surgery? This practice of hospital rebating is as reprehensible as fee splitting and surely we are not going to accept this as a principle no matter how we may assuage our consciences in practice.

Is the specialty of radiology to be merely an historical event in medicine in which you and I are now participating? Will the future see the merging of radiologic practice into laboratory routine and colorless mediocrity? Will the radiologist descend to the technical level and be the slave of shadows? We have watched the rise and fall of pathologists from the time of Virchow and out of the chaos has developed the necessity of affording more latitude, more responsibility, more cooperation with pathologists in order to

guarantee efficiency in this department of medicine. Can we not draw a lesson from this historical parallel? Must we go through a dark age of radiology before the renaissance and inevitable standardization of roentgen practice?

1532 Professional Bldg.

THE VALUE OF MEDICAL DIATHERMY IN CERTAIN TYPES OF DEAFNESS AND TINNITUS*

M. REESE GUTTMAN, M. D., and
MAX KULVIN, M. D.
CHICAGO

Deafness is one of the many perplexing disorders that confronts the otologist and frequently one that may respond but poorly to all of his therapeutic efforts. Depending upon the etiologic factor or factors causing the symptoms of poor or absent hearing, many methods of treatment have been advocated, most of which rest upon a rational basis. However, not a few have been promulgated, without a real background of scientific philosophy, and often are unable to withstand minute scrutiny. Physical agents are relatively modern additions to the physician's therapeutic armamentarium and it was but natural for him to turn to these for aid in the management of deafness. Medical diathermy is probably the most popular of the various energies advocated in the treatment of hardness of hearing, especially in the hands of general practitioners and those otologists who evidenced extreme interest in physical methods of treatment.

About five years ago one of us (M. R. G.) had occasion to employ diathermy in a series of unselected cases of deafness with such uncertain and unsatisfactory results as to abandon it. Within the past year we had the opportunity to collaborate with Dr. Joseph C. Beck in the preparation and contribution of a section dealing with such physical methods in otolaryngologic practice, to a standard text-book on physical therapy. In the collection of the material for this work and in the many discussions with otologic confreres, it was surprising to learn that in addition to the manufacturers of the various apparati, not a few otolaryngologists, especially in the United States, Canada and Australia, were enthusiastically advocating it. It is to be regretted, however, that many of the reports dealing with diathermy as a treatment for deafness rested solely upon the patient's subjectively founded statement that he heard better, and frequently took no account of the natural history of the disease. Only rarely were scientifically controlled methods employed for judging its value. It struck us as being of extreme importance to once more investigate this method for which much had been claimed in alleviating or curing the blight of deafness.

A series of patients with a complaint of deafness with or without tinnitus were studied. In addition to the routine examination of the nose, teeth, throat and ears, a careful systemic investigation as well as thorough blood studies were employed. The type and degree of hearing defect was determined by careful conversational and whispered voice tests, the various tuning forks, Galton whistle, Struycken monochord and audiometer. The voice tests and audiogram were repeated at intervals during the course of treatment and were the basis upon which the effect of the diathermy was evaluated.

The treatment consisted of giving three thirty-minute seances of diathermy a week, using heavy foil electrodes over the treated mastoid and the opposite cheek, contact being maintained by a turban bandage. The patient's subjective sensations were employed in judging the amount of current used, it being only rarely necessary to use more than 400 or 500 milliamperes. The hearing was tested at least at weekly intervals under standardized conditions, the electrical constants of the audiometer being especially watched. The following observations were made.

Otosclerosis. Eleven cases of otosclerosis were subjected to treatment with medical diathermy. In all instances there was present a normal appearing drum-head and patent eustachian tube. The Rinne test was negative, the Schwabach markedly prolonged, the lower tone limits raised and the upper tone limits lowered. In all, the hearing defect was bilateral and was accompanied, in most of these patients, by a recurrent tinnitus that was variable in its intensity. In none of these cases did the tinnitus persist over a period of months without some variable interval of diminution or relief. In fact, the tinnitus

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had a tendency towards becoming irregularly cyclic in its periodicity.

The response of these patients to medical diathermy was noteworthy. Nine of the eleven stated that they could hear better after being subjected to the treatment, for the most part saying that they could hear better over the phone or that their friends and relatives thought they heard better. All became more or less enthusiastic in their comments regarding the apparent benefit from this type of treatment. The voice and audiometric tests, however, showed no improvement whatsoever. The other two patients noticed no change in their ability to hear and this was borne out by the actual tests. Were one to evaluate the worth of diathermy in otosclerosis from the patient's subjective symptoms alone he might be led to infer that the method had promise.

The subjective tinnitus was variably affected, apparently benefited in four instances, unchanged in two and aggravated in five. A careful inquiry several months later elicited the fact that those cases in which the tinnitus had been aggravated also showed a recurring decrease and increase in the intensity at varying intervals several times. The same phenomenon was observed in the cases that were improved and unchanged as regards to their tinnitus. The natural history of the variability in the nature and intensity of the tinnitus in otosclerosis could well explain the uncertain effect of the diathermy upon this distressing symptom. Were one to ignore this fact he might be easily led into another *post hoc ergo propter hoc* fallacy that recurs so frequently in medicine.

From these very few cases we were once more forced to conclude that in our hands at least and with the technic employed diathermy had little or no effect upon the hearing and tinnitus in otosclerosis.

Tubal Occlusion. Two cases of deafness subsequent to a tubal occlusion complicating a hypertrophic rhinitis lent themselves for study. The statement has been repeatedly made that diathermy may effect a resorption of exudative products and fibrosis and that the middle ear and eustachian tube may be affected by the so-called diathermy beam by placing the electrode over the affected mastoid and opposite cheek. In both of these cases it was decided to treat one side by diathermy and the other by the use of inflation and treatment of the tube with ephedrine applied by the Yankauer applicators.

In these two cases the subjective statements of the patients coincided with the results of the voice and audiometric tests. Both patients reported that the side treated by the diathermy was unchanged while the opposite side treated in the manner described above rapidly became normal. While it is undoubtedly true that two cases are little to judge from, yet it is evident that diathermy could not compare with orthodox therapy in the treatment of a hypertrophic eustachian salpingitis. This was further borne out by the fact that the side that did not respond to diathermy was rapidly improved upon institution of inflation and local shrinkage with the Yankauer applicator.

Serous Otitis Media. One case of serous otitis was subjected to treatment with diathermy. It was a classical text-book picture showing a fluid level and foamy appearance after inflation. Bubbling was apparent to the observer during inflation. The fluid did not disappear nor the hearing improve after several weeks of diathermy therapy and it was therefore decided to resort to myringotomy and repeated inflation. These measures were soon followed by an increase in hearing that became normal after a short interval. This was an ideal case in which to test the ability of this physical measure to cause resorbtion. Its failure to do so is apparent. It is indeed unfortunate that only one such case could be subjected to this form of therapy.

Chronic Otitis Media. Thirty-two cases of chronic otitis media were subjected to treatment with diathermy. These consisted of suppurative as well as healed out states. In the non-suppurative lesions a number of dry perforations varying in size were present. In order to rule out cases that may spontaneously improve it was decided to only so treat those cases that persisted for at least six months.

Twenty-four of the patients believed that they were improved by the treatment, insofar as their ability to hear better. The actual voice and audiometric tests, however, showed that only three of these patients could actually hear better than before taking the diathermy treatment. All of the three cases actually, as shown by the hearing tests, benefited were of a duration of less

than eighteen months. The factor of spontaneous improvement must not be lost sight of. The remaining eight cases that felt no improvement also did not show any by the voice and audiometric tests.

Seven cases in which no improvement by diathermy treatment was manifested had large dry perforations and could receive immediate improvement in hearing by the use of small pledgets of cotton as an artificial eardrum. It is apparent that diathermy does not offer a great deal in the treatment of hearing defects due to chronic inflammatory processes within the tympanum. The psychic effect of this rather spectacular form of therapy is as evident in patients suffering from chronic otitic lesions as in those afflicted with otosclerosis. It is a striking fact that man is so constituted that he may easily be led to believe what he wants to believe.

SUMMARY

Forty-two cases of hardness of hearing were subjected to treatment with diathermy. In nine cases of otosclerosis, two cases of tubal occlusion and one case of serous otitis no benefit was observed as indicated by carefully controlled voice and audiometric tests. Only three out of thirty-two patients with chronic otitis media were improved and whether this was actually due to the treatment is open to question. The effect of this form of therapy upon tinnitus in otosclerosis was also ineffectual. Thirty-three of the forty-two patients believed that they were benefited by the treatment and could hear better. Yet actual tests showed that this was true in only three instances. The improvement was therefore only apparent and not real. This method of treatment makes a decided impression upon the patient's mind and any benefit must be of a psychic or suggestive nature. The value of diathermy in the treatment of deafness and tinnitus must as yet be proven.

185 N. Wabash Ave. 1 N. Crawford Ave.

DISCUSSION

Dr. R. Sonnenschein, Chicago: I am glad to have had the privilege of reading Dr. Guttman's paper before the time of the meeting. Whenever a new procedure is presented to the medical profession, there is a great tendency to marked enthusiasm and widespread application of the same. In many instances, experiences have shown that while at first great claims were made for new methods, as time goes on the pendulum swings the other way and it is found that proper application is often rather restricted.

When Roentgen rays were first announced to the world and were used in this country, medical literature was soon filled with reports of marvelous cures of almost every known ailment. Later it was found that not only were these hopes not realized, but it was shown that in many instances, if not properly used, the rays themselves caused serious burns and other damage to tissues and individuals. History seems to repeat itself. Not so many years ago a number of new methods in physiotherapy were presented and many new appliances perfected. Hopes ran high; we heard and read of marvellous results in almost every direction. Now that opinions and experiences are crystalizing, we find that some of these procedures have only a limited sphere of usefulness. It is very gratifying to me, therefore, to note the conservative tone of Dr. Guttman's very timely paper.

It is true that one should not always judge things a priori, as experience may contradict philosophical reasoning. Nevertheless, when one considers the nature of the pathology in a condition like that of otosclerosis, it would seem inconceivable at the outset that the application of increased heat to the tissues would bring about changes either at the foot plate of the stapes or in other parts of the bony cochlear capsule. Likewise, when there has been considerable destruction and interference with the function of structure of the middle ear, it likewise seems impossible to restore these parts by the use of heat. When definite bony changes have taken place, or definite and marked cicatricial changes in soft tissues, medical diathermy cannot restore them. It is entirely different when one considers a subacute or chronic inflammatory change in the soft parts or in the ear. Here it is conceivable and might seem rational that considerable heat within the tissues might produce changes beneficial to the structure and therefore the function of the parts.

The moral of the whole movement of physiotherapy with special reference to the ear, nose and throat, appears to me to be that it is necessary to apply good common sense when considering the rationale of any procedure in diathermy. By a careful use of such a procedure in certain cases when a definite diagnosis has been made, or where the results are checked by a careful examination, it is possible to note whether beneficial results have or have not occurred. It is a well known fact that many patients, especially those afflicted with otosclerosis, are *subjectively* improved by any measure that is applied or any treatment that is instituted, but when examined carefully it is found that there is *no objective* improvement. As a rule, within a few weeks after the special treatment has been begun, whatever it may be, the patient loses the apparent improvement first noted on changing treatment or doctors. It therefore behooves us not to be too enthusiastic merely because a patient says he believes he hears better. It is necessary to examine him carefully before and after a series of treatments in order that one may know definitely whether real improvement has or has not

taken place. With diathermy or with any other procedure that is proposed to the medical profession, the old rule holds true as enunciated in Holy Writ—"Prove all things and hold fast to that which is good."

Dr. A. R. Hollender, Chicago: I am in complete agreement with the essayist in his statement that diathermy is of no value in otosclerosis. I have frequently emphasized this, but I have repeatedly been misquoted. I also agree that it is valueless in old tubal obstructions. After several years experience in the application of physical therapy about the head, I am convinced that these two types do not respond; in fact, in some cases the condition is aggravated.

I am not so sure, however, that these negative results apply to all types of middle ear deafness. We do not know just what factors are aids to our therapy; some cases of otitis media have responded under diathermy but just what the role of diathermy is in the improvement cannot be definitely stated. The technique applied by the essayist may have been at fault. He does not state for what time his patients were under treatment. This is an important factor.

At the present time all we can fairly say of the middle ear cases is that the therapeutic test is the only fair test; the surface has only been scratched so far as the possibilities of treatment by diathermy is concerned in otology.

Dr. W. V. Mullin, Cleveland: I am much interested in what Dr. Guttman said, and I agree with him wholeheartedly. I think he has brought several things out clearly—the susceptibility of these poor people to any type of quackery which may offer help, and the implicit faith these people have and a great many doctors have, in anything electrical. It always brings out that feeling expressed by—"Manana"—the hope that something will bring results, tomorrow if not today. As Dr. Hollender said, the surface has only been scratched in this therapy. That has been going on for many years, as you and I can remember. You know that tuberculosis has been treated by x-ray, all types of skin diseases, so deafness came in for its share, and there is always one man in every part of the country who has established himself in connection with each new fad, and has these people coming from a long distance to have a harmless little exposure to x-ray to cure their deafness. And they will go. If you promise them anything they will come to you. There is no field that offers itself to the charlatan more than deafness. As Dr. Guttman said, you take their word for it and they feel better, but you test them and find they are exactly where they were before.

Dr. M. R. Guttman, Chicago (closing): Dr. Hollender brought up the question regarding the technique employed. This technique was taken from the textbook he wrote in collaboration with Dr. Cottle. We followed it as closely as we could, and while we did not treat the patients for six months to a year, we feel that after three months, without accomplishing much, we were justified in discontinuing the treatment.

PHRENIC-EXERESIS IN THE TREATMENT OF UNILATERAL PULMONARY TUBERCULOSIS*

GEORGE M. LANDAU, M. D.,
Radiologist, Chicago Memorial Hospital, Cook County Infirmary Hospital, and Cook County Tuberculosis Hospital
CHICAGO

It has been my good fortune in the past 10 years to be associated with the Cook County Tuberculosis hospital as radiologist, during which time some 15 or 20 thousand x-ray films of pulmonary tuberculosis in its various stages it has been my province to observe. Among the early x-ray cases were those treated by the time honored method of rest, fresh air, sunshine, good food and tuberculine, still later those treated by means of artificial pneumothorax and of recent date these methods supplanted by certain surgical procedures, namely "Phrenic-Exeresis." Should the foregoing remarks tend toward enthusiasm, it is that enthusiasm which in my opinion is borne out by the facts as revealed on the x-ray film following this surgical procedure and because in the opinion of the writer seeing is believing, and since in all his experience with the aforementioned methods of treatment no ray of hope of a cure has shown through the mottled and cavitated lung with such promise until the advent of "Phrenic-Exeresis" in unilateral pulmonary tuberculosis. You as well as I have seen the early active lesion involving only a small area disseminate in spite of all known treatment, eventually involving the entire lung and by extension the opposite one as well and ending our study in most instances of this so-called early incipient case at the post mortem table.

If operative procedures and the results obtained by them show that surgery has an immense value in the treatment of pulmonary tuberculosis, supplementing sanitorium treatment then there is every reason to justify the enthusiasm following the results of such treatment.

If we can show by our records cases of clinical cure or arrest such as the following: the patient, a physician without previous symptoms, has a severe hemoptysis, x-ray examination revealing a large cavity in the right lower lobe, positive sputa, continuous high temperature which in

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spite of rest in bed continues and on repeated Roentgen examination reveals an increase in size of the cavity and lower lobe mottling, following which right phrenic extraction was done and immediate improvement was noted, i. e., lessened sputa, drop in temperature and diminution in size of the cavity, and three months later a gain of 25 pounds in weight, normal temperature, negative sputa, absence of mottling and practically complete obliteration of the cavity—then this procedure must merit our attention and serious consideration and the remarks made cannot be attributed entirely to over-enthusiasm.

The surgical treatment of unilateral pulmonary tuberculosis has been termed radical treatment; if so it is unquestionably time that some radical form of treatment be instituted to stem a disease whose mortality rate is certainly not decreasing from the present method of treatment nor in the proportion to the advancement of science in the treatment of other diseases which not so long ago were likewise termed radical, surgical or therapeutical treatments. The argument that phrenic-exeresis may produce death is not sufficient argument against this surgical procedure not any more than an argument against the surgical removal of an appendix or gall bladder which may lead to the death of the patient, for if in the foregoing surgical procedures these diseased organs are not removed, they will cause death and so will, and does, pulmonary tuberculosis in spite of rest, fresh air, good food and sunshine.

In the program as inaugurated by Drs. Otto C. Schlack and Jerome R. Head, medical superintendent and surgeon of Oak Forest Tuberculosis Hospital, respectively, there has been no operative mortality or morbidity and no patient has been made worse by the treatment and no consideration has been a recognition of the type of patient with whom they dealt, these patients being drawn principally from the laboring and poor classes of a large metropolitan area. Since rest is the one essential factor in hoping to attain a cure or arrest, what better means have we at our disposal with practically a negligible element of risk than phrenic evulsion. Phrenic-exeresis was primarily instituted as a preliminary to artificial pneumothorax and thoracoplasty. I believe that the results obtained in exeresis have by far surpassed its original intent and purpose and where it was at first supposed to be merely an adjunct it is proving itself to be a curative agent in itself.

As a result of destruction of the phrenic nerve, a paralysis of the dome and atrophy of the muscle fibers result. As a result of this atrophy the dome rises into the thorax partially on account of the intra-thoracic negative pressure but mainly because of the intra-abdominal pressure. Maximum rise is not observed until complete atrophy occurs and the rise varies greatly in some only 1 or 2 cm., in others 7 to 8. These changes further decrease the size of that half of the chest and so allow to a measure collapse of the base of the lung relaxing all tension from the structures in the immediate direct or indirect contact with the upper surface of the dome, collapse of the cavities even those in the apex, abolition of tonic contraction of the muscle, relaxation of the strain on adjacent structures, the abolishment of cough so characteristic of diaphragmatic irritation and the removal of the dragging, ache and pain associated with basal adhesions.

The realization of these changes enables one to appreciate how great is the field of usefulness of hemi-diaphragmatic paralysis in the treatment of pulmonary tuberculosis.

Rest it is admitted is the specific treatment against progression and re-activation of pulmonary tuberculosis but do we really put at rest a lung by merely confining the patient to bed? It must be admitted that as long as the diaphragm rises and falls there is no rest to the affected part. In the treatment of bone tuberculosis not to speak of our fracture work rest by means of splinting is the accepted method of treatment and cure. What better method of splinting the lung than by means of phrenic avulsion. The argument that rest by means of pneumothorax is more acceptable and less hazardous does not hold true. Artificial pneumothorax is a dangerous practice even in the hands of the most skilled. Pleural complications and air embolism are only two of the more serious complications which give a high mortality rate. The risk of producing pleural complications or air emboli is incurred with each insufflation or at least once a week. Careful and prolonged supervision is essential in maintaining complete collapse and where once the lung is permitted to expand by failure of continued complete collapse, the formation of adhesions precludes any further attempted collapse lest serious injury and even death by

hemorrhage from tearing these adhesions occurs. Further disadvantages of artificial pneumothorax is the fact that in 95 per cent. of all cases an effusion results and not infrequently a pyothorax. Neither does the argument that the lung at the termination of this method of treatment re-expands and resumes its normal function hold true. On the contrary the lung suffers as serious and permanent disability as it does in phrenic evulsion plus a displacement of the mediastinum and great vessels, multiple adhesions, immobilization of the ribs and a narrowing of the pleural cavity. Dr. Head and others are of the opinion that no lung should be permitted to come out following termination of treatment of artificial pneumothorax until phrenicotomy has been performed, for it is their belief that a lesion which has become encapsulated while the lung is collapsed is less securely healed than one which has become closed with the lung expanded and which does not have to be subjected to stretching and tearing on re-expansion.

The question arises presuming phrenic evulsion fails to stem the disease in the affected lung or spreads to the opposite lung what procedure then is left open with a permanently paralyzed diaphragm. Phrenic-exeresis does not preclude pneumothorax on the paralyzed side nor in the opposite side as has been definitely attested to by Vajda who in instances of bilateral tuberculosis does not hesitate to do an exeresis on one side and a pneumothorax on the other. While our records are still incomplete, the statistics at this time on 100 cases are as follows: "Cures 35 per cent., improved 60 per cent. and unimproved 5 per cent." Wirth and VonJaski in a study of 600 cases of operations on the phrenic nerve state in their conclusion that from the medical, social and economical standpoints the preferred treatment in unilateral pulmonary tuberculosis is phrenic evulsion, and that it is unquestionably the method to be used in combination with either pneumothorax and thoracoplasty and is a necessary form of treatment in the correct handling of patients suffering with unilateral tuberculosis. Raycroft states that where cure or arrest can be obtained by compression therapy no time should be lost in undertaking this most valuable means of treatment.

H. M. Davis has come to the following conclusions as indications for phrenic evulsions for all cases of basal tuberculosis, for cases of extensive tuberculosis with cavitation even in the apex as an accessory to pneumothorax to lengthen refills, to check pleural adhesions in pneumothorax, for the symptomatic treatment for cough and dyspnea and preliminary to thoracoplasty. Drs. Wallace Frank and O. O. Miller draw the following conclusions in their study of 100 cases as follows: 40 per cent. of far advanced cases showed improvement; in 8 the sputa became negative for T. B. bacilli and in 8 the cavities disappeared. They state that a good phrenicotomy is better than a poor pneumothorax. It is less hazardous, less discomforting and unattended with complications and that the good results of phrenicotomy are not dependent on the location of the pathology but rather on the retractability of the pulmonary tissue.

The authors on this subject are in accord that this form of treatment may not be the best form but all are agreed that until experience proves otherwise the surgicel treatment of pulmonary tuberculosis has immense value and from their observations they are convinced that surgery is indispensable in supplementing sanitorium treatment.

It is probably not within the province of the radiologist to draw conclusions or elucidate on the indications and contra-indications to phrenic exeresis other than those conclusions which he deducts from the Roentgenogram itself but certainly after following such a series of studies of these cases as we have one cannot help but conclude that in a disease as serious as pulmonary tuberculosis and in which such an agent as this has proved of such great therapeutic value, I do not see how one can escape the conclusion that this remedy should be applied as completely and effectually as possible regardless of the fact that the patient may get well without it, and as has been so ably expressed by Drs. Schlack and Head with the sole instruction that the risk and disability incident to the treatment be not greater than that incident to the disease.

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DISCUSSION

Dr. Otto C. Schlack, Chicago: I am happy to see the trend toward phrenicoexeresis replacing artificial pneumothorax as first on the list of surgery in tuberculosis. Artificial pneumothorax has held first place for years, but phrenicoexeresis is rapidly replacing this as shown by the slides. Of 120 cases we had only one bad result with phrenicoexeresis, that being a Horner's Syndrome. I had occasion to see a man doing a phrenicoexeresis who did not have much experience, and in evulsing this nerve, which would happen to the best in doing this operation, the subclavian artery was torn and severe hemorrhage and death followed. I believe these are the cases that bring up the death rate.

Now, in comparing artificial pneumothorax with phrenicoexeresis, in 106 cases, 3.77 per cent. showed symptoms of air embolus. We were fortunate enough not to have air embolus and death. In artificial pneumothorax this must be carried on for a period of two to five years before allowing the lung to expand. The possibilities of complications in artificial pneumothorax are greater, regardless in whose hands the artificial pneumothorax is done. Of these 106 cases of artificial pneumothorax, fifty per cent. developed fluid in some minute form or in large quantities, and of these 106 cases, 16, or 20.5 per cent., developed pyopneumothorax. Of these sixteen cases of pyopneumothorax, eight died, two were unimproved, and two improved. Of these sixteen cases, four were treated with the closed method of hyclorite being made ready for thoracoplasty. If a phrenicoexeresis is done first with no results, you may then give artificial pneumothorax. If artificial pneumothorax gives no results you are then ready for thoracoplasty, because phrenicoexeresis had been done before artificial pneumothorax was started. I would advise that a phrenicoexeresis be done first, and if necessary you can always give gas.

In closing, I wish to thank Dr. Landau for his splendid paper given here, and I know that the trend of phrenicoexeresis will spread all over the country as it has been doing in the past.

Dr. Adolph Hartung, Chicago: I enjoyed this paper of Dr. Landau's very much. However, I think that there is one phase of this subject which has not been sufficiently stressed by him, especially as regards its interest to us as roentgenologists. If we were all working with chest experts or men who make a special study of tuberculosis, we could almost take the part of the technician and furnish our films to the operator, and he could draw his own conclusions or make his own diagnosis. As a matter of fact, I have done a good deal of this phrenicoexeresis and thoracoplasty roentgenorgraphy in conjunction with Dr. Hedblom's work, and I seldom aim to make any interpretation of findings to him.

As roentgenologists, the phase of this subject that should interest us is calling attention to the cases which are suitable for this class of work. We, of course, work largely with general practitioners and our interpretations to them should not end with the interpretations of findings in the form of the probable lesion. I think the most important thing is that we should point out to these men the advisability of this kind of surgical procedure in connection with certain types of tuberculous lesions, and that is what the roentgenologist should get out of a paper of this kind.

Dr. Harold Swanberg, Quincy: I would like to ask a question. I noticed on one of the slides that a phrenicotomy was done on a patient with bilateral pulmonary tuberculosis. I would like to have Dr. Landau emphasize the indications for phrenicotomy particularly when the opposite lung shows tubercular involvement.

Dr. Otto C. Schlack, Chicago: Regarding the case which was shown here, the physical examination is the thing that guides us. The physical examination shows us which side to work on. If there is an extension to the opposite side, we always attempt to do the phrenicoexeresis on the side with the most activity, and in doing so the opposite side rapidly clears up. If you are going to ask me why, I can only say that if you reduce the activity on the side of the phrenicoexeresis 25 per cent. to 30 per cent. the toxicity is lessened and the patient has less toxins to take care of and the opposite side has a tendency to clear up. Not only in one, but in thirty or forty cases, this has been the result as we see it.

Dr. George M. Landau, Chicago (closing discussion): I agree with Dr. Hartung that it is the duty of the roentgenologist to explain to the general practitioner in cases of early pulmonary tuberculosis that a phrenicoexeresis is indicated in his particular case pointing out to him the minimum dangers of this particular operation and the benefit the patient will derive from it in either arrest or cure.

I wish now that I had brought with me slides to illustrate a case in which a patient had a hemoptysis, x-ray examination revealing a small cavity in the apex of the lung. His physician prescribed the usual treatment of rest, fresh air, good food and tuberculin. Reexamination some months later revealed a rapid dissemination of the pathology throughout the entire lung, all this in spite of the fact that he had gained 40 pounds, and with the exception of a slight shortness of breath and weakness attributed to his rest in bed felt and looked the picture of health. In view of the rapid dissemination I am unable to convince the physician that a phrenicoexeresis is the proper procedure even in this late stage. He is of the opinion that this patient will get well in spite of the dissemination

and points to his gain in weight as the one chief factor for this contention, but we know differently.

As to the case of bilateral pulmonary tuberculosis in which an evulsion was performed, I am going to ask Dr. Schlack if he can recall the particulars in this case. I do not believe it is the province of the radiologist to give the indications and contra-indications, that being left entirely to the physician or surgeon.

SOME PERTINENT ASPECTS OF HIGHER EDUCATION*

EDWARD H. KRAUS
Dean of the College of Pharmacy, University of Michigan
ANN ARBOR, MICH.

As our civilization has advanced, the periods of educational preparation demanded for the various professions have been steadily lengthened. Graduation from high school and from three to six or seven years of collegiate training are now generally required for admission to our health professions. Indeed, among the candidates for degrees here today there are many who have spent a whole decade in high school, in collegiate study, and in formal professional training in preparation for their life's career.

While this decade has been one of steady progress for them in their academic and professional education, it has, however, been a period of most extreme economic, industrial, and educational changes in this country and in the world as a whole. A consideration of some of these changes and their influence on higher education, especially as they refer to the professions dealing with the conservation of health, may not be out of order at this time.

Ten years ago, this country was in an era of unprecedented prosperity. As one of the results of the great war, orders in large volume came to us from all over the world. Unheard of industrial expansion followed. It was during these years that unquestioned world leadership in industry and finance passed from Europe to the United States. As a consequence, conservatism and moderation were soon ruled out of court, and uncontrolled optimism became the order of the day. A period of wanton and reckless speculation with "the sky as the limit" followed.

Then suddenly, the country was plunged from the high crest of prosperity and optimism into the deep trough of the most violent crash known in the economic history of the world. Pessimism, despondency, and even hopelessness and futility seemed to gain the upper hand in industrial and financial circles. And just now, after a period of careful inventorying, much sober thinking and widespread attempts at stabilization, we seem to be slowly emerging into an era of saner living and thinking, in which it is hoped that less emphasis will be placed upon the material and temporal things and a greater appreciation developed for the eternal, spiritual values of life.

During the early and middle twenties, American industrial, social, financial, and educational methods and policies attracted world-wide attention. They were studied by experts and commissions from all over the world, who came to our shores to gain first-hand knowledge of the secret of our success and prosperity. Among the very first to study our methods, policies, and institutions, intensively and critically, were the Germans. As a defeated nation, with industry and foreign trade wrecked, and burdened with huge debts, they were faced with the great problem of rehabilitation. The impressions and reports of the German experts and commissions appeared, upon their return, in a steady stream of publications ranging from small pamphlets to volumes of impressive size, and were in the main most favorable to us.

As a result, numerous American books on manufacturing processes and business administration were translated. Many of our methods were soon installed in some of the leading German industrial plants. Also, American products were imported in increasing quantities. This had progressed to such an extent that in February, 1926, while in Germany, I was taken by a German engineer from Berlin to Eberswalde in a Willys-Knight car to inspect a new brass and copper rolling mill with a lay-out and installation patterned after that of one of our great mills at Bridgeport, Connecticut. Moreover, the administration building of this great concern was equipped with typewriters, adding and calculating machines, and other office devices imported from this country.

All this was in striking contrast to the attitude of the leaders and thinkers, and of the Germans as a whole, at the beginning of the twentieth century. In those days, our country was

*Address, given in Chicago, at the commencement exercises of the Colleges of Medicine and Dentistry, and the School of Pharmacy of the University of Illinois, and of the affiliated Schools of Nursing, June 18, 1931.

looked upon as being an excellent outlet for goods labeled "Made in Germany," but of little significance in industry, education, or world affairs.

The lead taken by the Germans was soon followed by the French, English and others. The expression the "Americanization of Europe" was soon read and heard on every hand by the traveler abroad. Indeed, it was shortly followed by the "Americanization of the World." But, alas, our prosperity was not enduring. On account of our prominent world position the economic crash in this country was felt the world over. Accordingly, other nations are also passing through experiences similar to ours of the past two years. This period has been, and still is, the world over, one of the severest testing of the character not only of individuals, but of nations. We all hope a new and better world may emerge.

With this hasty and quite incomplete survey of the industrial and economic conditions of the past decade before us, let us now briefly consider some of the things that have transpired in the realm of education. For no matter what the economic status of the municipality, commonwealth, or nation may be, the training of the youth must go forward. Indeed, this training should be on a progressively higher plane if the younger generation of today is adequately to meet the problems of our civilization that is ever becoming more complex.

From the very beginning an intense passion for education has characterized the American people. As soon as they possibly could, the early settlers established schools for the education of the younger children. And only sixteen years after the pilgrims landed at Plymouth, Harvard College, our oldest collegiate institution, was founded. Indeed, during our colonial and expansion periods schools and colleges followed closely the westward movement of our pathfinders and settlers. This interest in education has constantly increased so that today it is greater than ever before.

During the decade just closed, the growth in education in the United States has been most extraordinary, especially at the high school and college levels. In this period the number of pupils in our elementary schools increased by about three million. High school enrollment nearly doubled, so that today nearly five million young men and women are studying in our secondary schools. This was to be expected for the facilities for education at this level have been expanding at a rapidly increasing rate since 1890. And, in the field of higher education our colleges and universities have been taxed to the utmost during this ten-year period, for here, too, the enrollment has shown an increase of about 100 per cent.

In the early days of our country we were chiefly concerned with providing educational facilities at the elementary level, so that the rudiments of education might be made available to all of our children. Of course, high schools and academies, and colleges and universities were established and developed, but the number of our young people availing themselves of the opportunities at these higher educational levels was rather restricted. But about 1890 greater emphasis began to be placed upon the need of high school education for the great mass of our young men and women. New high schools were established at the rate of one a day, and that has continued almost uninterruptedly down to the present time. With rapidly increasing numbers graduating from our secondary schools, the attendance upon our colleges and universities went up by leaps and bounds. Since 1900 there has been an increase of about 50 per cent. in the enrollment in our elementary schools, an increase of about 700 per cent. in our secondary schools, and one of nearly 600 per cent. in our colleges and universities.

Today about one in every four of our population is attending some educational institution. We have more students in our high schools and our colleges and universities than all the countries of the rest of the world have in similar institutions. These figures are not only interesting to us but also very impressive to foreign educators.

Thus, in the spring of 1928, for the first time in history, a group of thirty men and women representing all phases of education in Germany spent, with great profit, three months in this country studying all phases of our educational methods from the kindergarten to the graduate school. And only a few months ago Sir Michael Sadler, Master of University College, Oxford, England, in commenting in England upon the progress of education in this country, pointed out that in the United States about one out of

every 120 of our population is a college or university student. In Germany the ratio is only one out of 650, in France one out of 700, and in Great Britain one out of 1,000. In fact, in the State of Illinois with a population about one-sixth of that of Great Britain there are twice as many students in its institutions of higher education than in all the institutions of similar character in England, Scotland and Wales.

Moreover, while thirty years ago it was almost imperative that students, desiring advanced academic and professional training, spend some time in foreign study, today this is not so necessary because of the great educational advances we have made on the university level. Formerly, but few foreign students came to our shores for study, but today, as Duggan informs us, more than 10,000 students from other countries are enrolled in our colleges and universities. They come from all parts of Europe, Asia, and Latin America. In fact, this group is twice as large as the number of American students now studying abroad.

These very significant facts clearly indicate that our people have a passion for education, and that the training of our youth has long been recognized as a fundamental function, an essential safeguard, and a chief responsibility of a democracy such as ours. Indeed, this passion is greater than ever before. Today we spend well over three billion dollars annually to provide educational facilities for the somewhat more than thirty million who are enrolled in our various schools and colleges, staffed by a million teachers. Moreover, the amount thus spent has doubled during the decade we are considering.

While this sum seems to be enormous it amounts to only twenty-five dollars per capita. Indeed, it is no larger than the amount that is spent annually in this country for life insurance. And recent investigations by the Bureau of Education clearly indicate that although we place strong emphasis upon education, we spend more than twice as much for the luxuries of life, such as tobacco, confectionery, theatre, jewelry, perfumes, and cosmetics; moreover, our annual expenditure for the purchase of new automobiles is much larger than what we pay for education.

In discussing education in the United States the eminent English economist, J. Ellis Barker, in his critical survey entitled *America's Secret,* says: "The United States owe their vast wealth not merely to the great extent of their territory and of the natural resources contained in it, but also, and particularly, to the energy and ability with which the resources of Nature have been exploited by the people. The energy and ability of the American people are very largely due to the practical and thorough education and character training which they have received. Their abilities are rather acquired than inborn." Barker says further: "America's economic success is largely due to the fact that, in the words of the late Mr. Choate, 'Education is the chief industry of the nation.'"

Although the decade, just passed, has been marked by the greatest interest and expansion in educational affairs and facilities in the history of the country, or, for that matter of the world, it has also been a period during which education in all its phases has been subjected to intense criticism and severe testing. The objectives and the value of many of our educational projects and methods were repeatedly questioned, for growth and expansion do not necessarily result in genuine and permanent advance.

Much of this criticism came from within the ranks of the educator. Naturally, some of it was sincere and constructive, but much was not. Fortunately, the various groups of stalwart men and women who have had long experience in shouldering the burden of educational problems and have been the motive power behind some of the great forward movements can usually, and without much difficulty, differentiate between the sincere effort of tried educators for advancement, and the fanatic agitation of those, who commonly are young and more or less inexperienced, but have exceedingly active minds and vivid imaginations. It is members of the latter group who are constantly advocating that we throw into the discard the existing order and substitute all manner of educational will-o-the-wisps.

It was only natural that our rapid expansion should permit such pseudoeducators to flourish. The decade has, hence, seen many fanciful experiments tried at all levels of education, and then discontinued a few years later. One may, however, safely say that we are today, on the whole, educationally much wiser and farther up the ladder of progress than we were ten years ago.

Of special interest to the group here today is the splendid progress that has been made during the last decade in advancing the educational

requirements for admission to the health professions. At present we take great pride in the high standards that now, or shortly will, obtain in medical, dental, pharmaceutical, and nursing education. But we commonly forget that the present advanced preparation demanded for these professions is of comparatively recent date. Indeed, as recent as sixty years ago, the teaching of medicine in this country was considered a social disgrace. At that time the requirement for graduation in medicine at Harvard University, and at other leading medical schools consisted in the attendance upon two sessions of lectures of four months each. The degree of Doctor of Medicine was usually conferred after the passing of a nominal examination and upon the presentation of evidence of having studied medicine for three years, including the time spent in medical school. In 1870, shortly after he became president of Harvard University, C. W. Eliot endeavored to persuade the medical faculty of that University to advance its requirements for graduation. Among other things, President Eliot suggested that a written examination be substituted for the final five-minute oral examinations given by the professors in charge of the various subjects. The dean of the faculty, however, immediately pointed out that it would be impossible to hold written examinations for he knew that the students of medicine could not write well enough. What marvelous advances in medicine and medical education have been made in these sixty years! In fact, these advances are greater than those made by any other profession.

In considering this great progress in medical education we must not overlook the fact that much of it has taken place since the famous Flexner study, made in 1910. During the decade we are discussing there has been continued advance. And in spite of the present high demands, medical study had increased in popularity. We are told that last year more than 800 American students applied for admission to one of the medical schools in Scotland, and that the number of physicians graduated in 1930 by the sixty-six approved medical schools on the four-year basis was as large as the number that completed their medical training twenty years ago when we had twice as many institutions. Indeed, today the United States has more physicians than any other of the leading countries for our ratio is one doctor to every 800 persons; while in Switzerland it is one to 1250, in England and Wales one to 1490, in Germany one to 1560, in France one to 1690, and in Sweden one to 2860.

Dental education has also marched forward. The advances in this field are of even more recent date than those in medicine. Although the first college of dentistry in the United States was established in Baltimore in 1840, the teaching of dentistry was not recognized by any of our well established universities until 1867, when the Harvard School of Dentistry was organized. Similar units were then established at other leading universities. Interest in this phase of the conservation of health increased, and the number of young men and women preparing themselves for the profession of dentistry grew rapidly.

Although the requirements for admission to the study of dentistry and for graduation were advanced from time to time, the standards lagged much behind those of medicine. During the decade we are discussing Dr. W. J. Gies made his searching and constructive study of dental education under the auspices of the Carnegie Foundation for the Advancement of Teaching. Just as advances in medical education were greatly stimulated by the Flexner report, so the study by Gies contributed in no small way to the adoption of the present requirements of one or two years of college training in preparation for the professional work of three or four years. These advances have placed dentistry on an exceedingly high plane. By the general public the profession is held in high esteem, for the importance of the care of the teeth in the conservation of health is more intelligently understood than ever before.

The most striking progress during the ten years that we have been reviewing has probably been made in pharmaceutical education. Although historically pharmacy may be considered the mother of both medicine and dentistry, she has permitted her progeny to outdistance her in educational advancement and achievement, as well as in the recognition, at present, given by the public to these health professions.

Ten years ago many colleges of pharmacy in this country were admitting students

with but two years of high school preparation, and graduating them after two years of professional study. The demands, however, of pharmaceutical educators, especially those associated with our state universities, were such that the requirements for admission to and graduation from the colleges constituting the American Association of Colleges of Pharmacy were steadily advanced, so that today all colleges of the Association demand high school preparation for admission and already more than one-third of them have made the four-year course obligatory for graduation. In 1932 this requirement will become compulsory for all members of the Association.

During this decade a study of pharmacy, in many ways comparable to that of dental education made by Gies, was conducted under the auspices of the Commonwealth Fund by Dr. W. W. Charters of Ohio State University. Although Dr. Charters confined his investigations chiefly to the functions and responsibilities of the neighborhood pharmacy, his observations on other phases of the profession and upon pharmaceutical education were most significant and helpful. The Charters report contributed very materially to the extraordinary advance in pharmaceutical education made during the past ten years.

Observations similar to those which have been made for medicine, dentistry, and pharmacy might also be cited in the case of nursing education. Better preparation and higher standards for the professional training have been insisted upon. Marked advances have accordingly been also made during the past ten years in this very important phase of the promotion and conservation of health.

Not only has there been marked improvement in the character and the quality of the students entering and being graduated from our institutions giving instruction in these disciplines, but much higher standards have also been set for those seeking teaching positions in these fields. Then, too, the teaching facilities have been greatly improved, for at many of our universities splendid new buildings and laboratories for instruction in medicine, dentistry, pharmacy and nursing have been built during this decade.

Furthermore, the period has been marked by unusual progrss in hospitalization, not only as to the number of new hospitals, but also with regard to generally improved facilities. The planning and constructing of the very beautiful and efficient medical centers in many of our leading cities give striking testimony to the fact that our citizenry is more vitally interested in health than ever before, and that the health professions are earnestly striving to render a wider and better service to a larger proportion of our population. Indeed, the older idea of the hospital as a "house of death" has given way to the newer and more appropriate conception of it as a "house of life."

In the furthering of these newer conceptions of health the federal government has aided materially through its national conferences on child welfare, by the work of the committee on the costs of medical care, and by the splendid assistance given by its health service, and its many other agencies. And the very important activities of such organizations as the Red Cross, the Rockefeller, Milbank and Commonwealth Foundations must not be overlooked.

That our people consider the promotion of the physical health of our communities as one of their most precious assets, and accordingly desire to learn how to live better and more effectively, is clearly evidenced, I believe, by the fact that as a nation we spend more than three billion dollars a year for medical care. This sum is as large as that expended for all educational purposes. Moreover, our leaders fully realize that if the public is to receive the best possible service there needs to be close and sympathetic cooperation on the part of the great health professions—medicine, dentistry, pharmacy, and nursing.

The decade under review has also been marked by great advances in scientific medicine for many extremely important discoveries and contributions have come from the research laboratories of our universities and our great pharmaceutical manufacturing plants. All I need to do is to remind you that insulin in the treatment of diabetes and liver extract in pernicious anemia were developed during these ten years. Furthermore, the Kahn and Dick tests are also contributions of this decade. The present-day emphasis on vitamins, the synthesis of thyroxin, the intensive research on hormones, and the extensive production of efficient synthetic organic medicinals are developments of the last few years. Many other achievements might be cited, but enough has been said to show that the scientific advances

made in the various fields related to health have been extraordinary during the period that you, who are candidates for graduation here today, have received your training in secondary school and college.

I hope that this survey, although very hurried and quite incomplete, has clearly indicated that in spite of the recent serious economic and industrial reverses in this country, education and scientific achievement have moved steadily forward. And that it is also evident that the last decade has been marked by advances of far-reaching importance to the health professions. Accordingly, one may sincerely affirm that the candidates for graduation here today have had the benefit of the best facilities ever provided by this University in their respective fields. You will enter upon your life's work with an excellent preparation and a superior scientific knowledge. That you are aware of this, I am confident. I am also confident that while you rejoice that you have been so privileged, you are cognizant of the enlarged responsibilities that these advantages impose. It is therefore incumbent upon you constantly to strive to render to humanity a service as full, efficient, and self-sacrificing as has ever characterized your professions. To you, much has been given, and from you, much will be expected.

DUST SENSITIZATION*

L. BENNO BERNHEIMER, M. D.
CHICAGO

In 1921 R. A. Cooke reported his observation of specific sensitiveness to house dust in an asthmatic. He believed that dust contained an unidentified factor which did not agree by test with any other known extract. Two years later Spivacke and Grove showed that dust was the exciting cause in an experimental study of a case of asthma. They confirmed Cooke's opinion that dust contained a specific atopen which produced a local skin reaction in the individual whose blood contained the corresponding reagin, and demonstrated by the Prausnitz Kustner phenomena that the dust atopen was not a product of horse dander, to which latter material the individual was also slightly sensitive. Storm and Brutel reported excellent clinical results in asthma when in selected cases desensitization for various specific atopens was combined with desensitization to house dust. Feinberg reported four cases of asthma which showed marked improvement after desensitization to house dust; one of these cases showing a sensitization to no other protein.

Rowe studied 162 asthmatics and found that 42 per cent. gave skin reaction to house dust and that a number of these individuals gave a characteristic history of dust sensitization. He concluded that individuals who gave positive reactions to dust and whose histories were characteristic of dust sensitization should be treated with dust extract. Grove and Coca in 1925 concluded that the active principle in dust was not a protein, an observation that was later upheld by Black. However, Alles and other workers do not agree with Coca's conclusion, and at present the nature of the activating substance in dust is an open question.

We wish to report two cases of hay fever, one of asthma and one of allergic nasal disease in which dust desensitization was successfully employed.

Case 1. F. R., 6 years of age, suffered with coughing and wheezing which occurred especially in the morning for the past eight months. The significant point in her history was that the attacks were aggravated, according to her mother's observation, at any time when dust was in the air. A diagnosis of bronchial asthma was made. She showed no skin reaction to any of the usual proteins, but a strong reaction to dust, which was borne out on passive transfer. She was desensitized to house dust with an excellent clinical result.

Case 2. E. R., 24 years of age, suffered with hay fever commencing the first of May lasting until frost. He had had trouble for fifteen years. The diagnosis being early and atumnal hay fever. He showed strongly positive skin reactions to red top, timothy, June grass, tall ragweed and burweed marsh elder, and was given pre-seasonal treatment for these pollens. Although he was carried to a high concentration in his treatments, he began sneezing the first of May. The skin readings and pollens were checked with no result. He was then tested for house dust and showed a strongly positive reaction. Following a combined intra-seasonal treatment with both pollen and dust he had a comfortable summer.

Case 3. J. B., 24 years of age, complained of sneezing, nasal block, itching of the eyes and occasional attacks of wheezing. His trouble began August 15 and lasted until frost. He had had the attacks over a period of many years. There was a history of hay fever on the maternal side of his family, and he had had eczema when a child. He had never been under treatment. Skin tests revealed strongly positive reactions

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to short ragwood, burweed marsh elder, cockleburr and dust. The condition was diagnosed as autumnal hay fever with pollen asthma. Pre-seasonal desensitization was given with a mixture of the above pollens, the dust being omitted until the middle of August. On August 25 he was having mild attacks of hay fever but with persistent attacks of asthma during the night. He was then desensitized to dust by daily injections, following which the asthma entirely disappeared. The fact that he had no asthma in the winter when exposed to dust is readily explained by the recognized cumulative action of pollen atopen in a sensitized individual. The reaction of the combined effect of the pollens and dust caused him to have asthma.

Case 4. I. M., 54 years of age, for eleven years had had headache over both eyes, nasal discharge and block. During this time she had undergone a left sublabial antrum, a left ethmoid and sphenoid exenteration, and a submucous resection. There had been much local treatment to the nose. The surgical and medical treatment had always been on the basis that her nasal condition was infectious in character; at no time had an allergic study been made. The allergic history was negative except that she had trouble only when she was in Chicago, and was much worse when in her own home, which she had occupied for the past fifteen years. Examination of the nose showed the resultant scarring of the extensive operative treatment. The mucous membrane was pale and waterlogged, and there was thick mucoid secretion on both floors as well as in the antrum and ethmoid area operated on. Smears of this secretion, however, showed a predominance of lymphocytes with relatively few polymorphonuclears. Based on these findings a diagnosis of allergic rhinitis was made, and following the clue that she suffered most when in her own home, a dust extract from her vacuum cleaner was made. A strongly positive skin reaction was obtained with this extract. She reacted to no other allergen, although the usual inhalents were tried. Following a course in desensitization with this dust extract a satisfactory clinical result was obtained.

CONCLUSIONS

1. All allergic individuals should be tested for dust sensitization.

2. Patients with a characteristic history of dust sensitization showing positive skin reactions to dust extract should be desensitized to dust, either alone or in combination with other specific activating atopens.

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104 S. Michigan Ave.

DISCUSSION

Dr. Myron E. Kahn, Chicago: In discussing Dr. Bernheimer's paper on dust sensitization I wish to emphasize one point which was brought out by the essayist. Allergic symptom complex, such as hay fever and asthma, is usually the result of a sensitization to more than one atopen, in other words, the production of the allergic symptoms is often the result of accumulative reactions of varied atopens to which the individual is sensitized. In order to alleviate symptoms it is not necessary to desensitize for all the exciting factors, but only for the principal ones; when dust is combined with other proteins in producing symptoms, the dust sensitization is often one of the most important factors in producing allergic symptoms, and therefore important to eliminate by desensitization.

I wish to cite a case of my own: A young lady, 25 years of age, had hyperesthetic rhinitis. She had been through all the tests with reactions to various atopens, and an attempt had been made to desensitize her. She consulted me and showed the usual nasal findings, such as waterlogged nasal mucosa, pale boggy membranes, watery discharge and sneezing. I tested her with a polyvalent dust extract and she showed a marked reaction. She was desensitized with extract of dust which was gathered from her home. She is now free from all symptoms; this dates back six months.

The technique used in making the test is as follows: 1/10 c.c. of a polyvalent dust extract is injected intrcutaneously in the forearm; a reaction takes place in from ten to thirty minutes, manifested by a raised blanched area or wheal, with a circumscribed hyperemic area; the size varies according to the sensitiveness of the patient. The dosage is then graduated according to the individual's tolerance, increasing the dosage up to 2 c.c.

We use the method of Coca for extracting dust.

RELATION OF SURGERY TO PRIMARY AND SECONDARY INFECTIONS*

CARL E. BLACK, M. D.,
C. ELLSWORTH BLACK, M. D.
JACKSONVILLE, ILL.

We will report this morning a case presenting multiple pathological processes, and requiring several operative procedures, together with por-

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tions of the history, the physical and laboratory findings and the treatment.

This man, who has kindly consented to appear here today, is 59 years old. He has lived in Illinois all of his life, farming most of the time. He is the father of five children. At the present time he is a guest of the County of Morgan. He was first seen by one of us in November, 1921.

At that time his complaints were abdominal pain, "indigestion", vomiting after meals, bloody at times, diarrhea, and loss of weight.

At that time his "Present Illness" read as follows: "At the age of 24, 'took sick at the stomach' and 'started running off'; lasted several weeks during the hot weather. Has had it several times since for shorter periods. This diarrhea was the beginning of the 'stomach trouble.' For several weeks before coming to the hospital had pain and bloating in the right side of the abdomen. The 'misery and pain' was mostly in the right side of the abdomen 'just below the ribs,' and came on in 'spells.' It was always in the same place. 'Food hurts me.' 'Food does not digest.' Vomited frequently after eating and at time vomited blood. 'Sometimes pain was lower down on the right side near the hip bone.' Between attacks was usually constipated and took laxatives. Has lost 15 pounds in the last year."

The family history seems to contain no information of importance.

The past history of this man is important. He had measles, mumps, whooping cough and chicken-pox in childhood. He had what he calls "intermittent typhoid fever" at the age of 18. He was sick four months. Had "itching piles" since age 19. Had several mild attacks of sore throat; then at 29 had a severe attack. "Throat swelled up and broke"—"a lot of pus came out." This was on the right side and it left a "hard place on neck below the right ear." Had no trouble on the left side. Had malaria at 30.

At 44 (1916) some teeth became loose—he pulled several himself.

At age 48 (1920) had the remaining teeth extracted on account of pyorrhea.

Had influenza at 46 (1918)—was a severe attack—sick eight weeks. After this attack had to empty bladder four or five times at night for several weeks. Has had no other attacks of frequency. No other urinary disturbance, such as dribbling, difficulty in starting or stopping stream.

At age 21, he weighed 165 pounds; at 28, 180 pounds. There was no loss in weight until the present illness.

He has never used alcohol; he chews tobacco; drinks three cups of coffee a day.

On physical examination the following seemed important:

A tall, lanky, sharp-featured man.

All teeth are missing.

The tonsils are small, embedded.

The heart and lungs were free from abnormal findings.

The skin was dry.

There was no thyroid enlargement.

The abdomen was flat, free from distention or visible peristalsis or masses.

There was no hernia. Palpation disclosed no muscle spasm.

The following areas of tenderness were present:

(a) Tenderness in the epigastrium near its lower border and a little to the right of the median line.

(b) Tenderness in the gall-bladder area.

(c) Tenderness, less marked, just above McBurney's point.

(d) On deep inspiration the tenderness over the gall-bladder area was increased and there was a fullness which was taken to be the gall-bladder.

The liver dullness was not increased. Its margin was not felt.

Spleen, kidneys and bladder seemed normal. There were no hemorrhoids. The prostate was not enlarged. The reflexes were normal.

Urinalysis was negative.

P. S. P. was 57 per cent. in two hours.

Hemoglobin was 70 per cent.

White cells, 7,600.

Reds, 4,000,000.

Wassermann negative.

Blood pressure was 138/98.

Roentgenologist's report ends with the statement that "plates confirm the roentgenographic findings, all of which indicate a duodenal ulcer."

Diagnosis: Ulcer of stomach; appendicitis, chronic; cholecystitis, chronic.

Operation: The abdomen was opened, through a right rectus incision. Many adhesions were encountered, involving the anterior abdominal wall, the pyloric end of the stomach, the gall-bladder and appendiceal regions. The appendix was removed. A gastric ulcer was identified near the pylorus. A gastro-jejunostomy was made and the abdomen closed.

The post-operative course was mild. A parotitis, on the right, was troublesome from the 11th to the 15th day. X-ray on the 33rd day showed the anastomosis working well.

He left the hospital about eight weeks after operation. His condition was good; his appetite and weight were improved. He was not seen for several years.

Re-admission: In August, 1930, he was again admitted to the hospital complaining of abdominal pain, indigestion, "gas on the stomach" and "bowels which will not move." Had lost weight and strength. He has had no other illnesses since leaving the hospital.

Examination: Tenderness marked over G. B. region and gall-bladder can be felt on deep inspiration, moderate general abdominal tenderness. Abdomen is flat but cecum is tympanitic. Muscles are weak and flabby.

Had facies of distress.

Heart, lungs and kidneys show no abnormalities on examination.

Urinalysis and blood examinations negative. Kidney function is more than 50 per cent.

X-ray Examination: Shows anastomosis working well.

Diagnosis: Cholecystitis confirmed by direct examination and by the fact that there is little or no tender-

ness over pylorus and appendix has been removed. No symptoms or signs of pyloric obstruction.

Operation, Aug. 12, 1930: The abdomen was opened with radio-cautery through old line of incision. A loop of ileum was densely adherent to the scar and was accidently opened but was immediately closed. While this loop was somewhat constricted by the adhesions it seemed sufficiently patent. There were many adhesions extending from appendical region to the gall-bladder and involving the anterior abdominal wall, colon, stomach, duodenum and gall-bladder which had to be separated before the gall-bladder could be reached. There was no mass at pylorus. The neck of the gall-bladder was exposed and cystic duct ligated. The gall-bladder was then separated from the liver and removed with the radio-cautery knife. In fact all incisions including adhesions were made with the radio-cautery knife and hemorrhage checked by fulguration. There was a minimum of bleeding. The anastomosis made in 1921 was functioning and in good condition.

The abdomen was closed with cigarette drain. The pulse during operation varied from 90 to 120. There was marked evidence of shock.

Post Operative:

1. Diagnosis: Cholecystitis, chronic, with many adhesions involving the gall-bladder and stomach and ileum.

2. Convalescence stormy. Intravenous glucose, digalein, morphine were required. Had vomiting and abdominal pain.

3. On the 9th day high fecal fistula developed. All symptoms improved except distress from jejunal discharges. Two methods were used to control the destructive action of the digestive juices on the abdominal wall. The N/10 HCL and thick beef juice, with and without olive oil described by Caryl Potter seemed to be less effective than the Kaolin-glycerine paste suggested by Smith and Christensen in 1925. (Transaction of Western Surgical Ass., 1925.) Suction was not tried.

The fistula became smaller but on Nov. 5th (77 days after operation) was still discharging. The patient's condition seemed to justify an effort to close the fistula. His strength and appetite were fair and he had been sitting up several hours a day.

Anastomosis, Nov. 5, 1930: The whole scar, including area involved in fistula, was excised. The gut (ileum) was isolated and about eight inches of gut was excised, ends closed and a side to side anastomosis was made. On account of loss of tissue due to the several operations and the widespread adhesions a great deal of difficulty was experienced in closing the abdomen.

One small cigarette drain was left in the wound.

There was considerable shock which quickly subsided.

He was up in chair in three weeks.

The wound dry in four weeks.

Discharged January 8, 1931.

This man is very much improved as far as appearance and nutrition is concerned. If you question him regarding his condition at the present time you will find that all of his past complaints are still present.

We are not especially proud of the abdominal wall. The long period of fistula drainage, the three incisions, each an excision of the previous scar, are not conditions that preserve muscular tone, and prevent excessive scar formation.

Comment

We selected this case for your consideration because of its manifold manifestations of the results of focal infection. It is not easy to say which of the early foci is most important. There was tonsilitis, infection of the teeth, in which comparatively early all were lost and finally typhoid fever of a severe type. The earliest manifestation of infection seems to have been in the teeth.

Ever since Billings coined the term "focal infection" and Rosenow's demonstration of the "selective affinity" of strains of streptococci for the stomach, as well as other organs or parts of the body the profession has been giving close study to the "practical application of the principle that the treatment of gastric ulcer (and other inflammatory processes) should be reinforced by a thorough search for and elimination of, all possible foci of infection elsewhere in the body."—(John T. Finney, Practice of Surgery, Lewis.)

To apply this principle in the case presented we were confronted with numerous areas of primary as well as secondary, infection. To enumerate these makes quite a list. While it is not possible to name these areas in the exact order of their occurrence the following gives a fair idea of the problem:

1. Tonsillitis.
2. Peri-tonsillar abscess.
3. Infected teeth.
4. Typhoid.
5. Malaria.
6. Parotitis.
7. Appendicitis.
8. Cholecystitis.
9. Gastric ulcer.
10. Peritoneal adhesions due to a low grade peritonitis.

The first four are substantially in order but the correct order of the last four is somewhat in doubt. Either of these might have explained his early symptoms of indigestion, although it seems evident that in the later stages of his sickness,

but still prior to his first (1921) operation, the gastric pain, fear of food, vomiting of food and of blood and his loss of weight were due to his ulcer of the stomach. Physical examination at this time showed tenderness on palpation in both the appendiceal and the gall-bladder as well as over the pyloric areas, and a diagnosis of chronic appendicitis and cholecystitis in addition to gastric ulcer seems to have been justified, although "gastric ulcer" was used as both the working diagnosis and the final diagnosis. Appendicitis and peritoneal adhesions were given as a part of the final diagnosis following the first operation.

There are various theories as to the underlying cause of ulcer. Finney gives these as 1. Inflammatory, 2. Neurogenic, 3. Circulatory, 4. Bacterial. In this case No. 4 would seem to be plainly applicable, although his long worry over his marital and family relations would place No. 2 as a secondary cause.

Such a case presents a complicated diagnostic picture. While one wishes to avoid as far as possible "exploratory" operations, yet in the very nature of things the first operation was of necessity somewhat of an "exploratory" nature. At least, it was only after opening the abdomen that we finally decided which area should first be treated surgically.

All the symptoms and signs, except the x-ray findings, might have been present without the presence of ulcer. In this respect the x-ray was valuable although the radiologist thought the ulcer was probably on the duodenal side of the pylorus. In fact the ulcer involved the pylorus and may have extended sufficiently to the duodenal side to have justified the radiologists' opinion but the main portion of the ulcer was inside the stomach. It appeared to us that the ulcer was gastric in origin. The constriction of the lumen of the pyloric outlet was plain. This ulcer occupied the usual position—that is on the lesser curvature, toward the posterior side. This according to Balfour is the location of 90% of gastric ulcers.

The confusing thing found at the first operation was the widespread development of adhesions, involving stomach, gall-bladder, appendix and intervening structures and organs. This disposition of the peritoneum to form adhesions has complicated the whole case and is, no doubt, the thing which has prevented complete recovery. Nothwithstanding the intraabdominal adhesions the patient made a fair recovery and returned to work in about two months.

He got along moderately well for more than eight years. It is true that he continued to have most of his digestive symptoms but in modified form until July, 1929. He came in at this time complaining of persistent indigestion, being constantly distressed by the presence of "gas," sour eructations with pain after eating. At this time he located the pain in the right upper quadrant. There was tenderness and a suggestion of "a mass" in this area, and he was having increasing trouble from constipation and had lost in weight and strength during the preceding four months. A barium meal and an x-ray examination showed the gastro-intestinal opening was functioning. His vomiting was not as distinctly obstructive as prior to the gastro-jejunostomy. A diagnosis of cholecystitis was made without resort to a cholecystogram, as the clinical evidence seemed quite sufficient to warrant the diagnosis.

On August 12, 1930, the abdomen was again opened and the gall-bladder removed. No stones were found either in the gall-bladder or in the duct. The ulcer of the stomach was healed as far as we could judge without again opening the stomach. The pyloric orifice was evidently patent.

This operation was made with the radio-cautery knife, which may have been, in a degree, responsible for accidently cutting a loop of gut. The cut in the gut was hardly one-third inch long. The opening was immediately closed. The gut was densely adherent to the anterior abdominal wall and adhesions were more extended than at the first operation. Considerable difficulty was experienced in isolating and removing the gall-bladder. The neck was first isolated, and the fundus removed by working up to its base. The gall-bladder was large and distended and the whole region was enveloped in adhesions. A small drain was placed in the region where the gut was injured.

The operation was followed by profound shock and a great deal of abdominal pain. On the eighth day a fecal fistula developed following which the patient was much more comfortable. This fistula gave a great deal of trouble. There was extensive erosion of the abdominal wall. It was three months before we secured conditions

which would justify an attempt at closure of the fistula.

The abdomen was again opened on Nov. 5, 1930. Considerable difficulty was experienced in isolating the involved loop of small intestine on account of adhesions which were still more abundant and dense.

About eight inches of small intestine was excised and a side-to-side anastomosis was made. Due to the several operations and to the extensive erosion of tissue and the destruction of a wide area of peritoneum by the adhesions we experienced considerable difficulty in making a satisfactory closure of the abdominal wound. To our gratification the wound healed kindly and we had no return of our fecal fistula. He left the hospital in two months.

An interesting feature of this case was the fact that at no time was there any evidence of an active peritonitis.

Another interesting feature is the persistence of most of the symptoms for which he was originally operated on. That is, he still has abdominal pain, indigestion, fear of food, eructations and accumulation of "gas." These may finally disappear. However it is a little discouraging to do so much work and to subject a patient to so many risks and so much suffering, for such slight results as we seem to have obtained up to the present time.

The questions which we suggest for your frank consideration are as follows:

1. Should he have been treated surgically?
2. Would medical treatment have given as good or better final results?
3. Would some other method of surgical approach have promised better results?
4. What errors of surgical judgment does the history of this case reveal?

Our reasons for the original operation (gastroenterostomy) were three:

1. The long persistence of the symptoms which were undermining his strength and preventing his usefulness.
2. The presence of blood in the vomitus.
3. Increasing evidence of pyloric obstruction.

His loss of weight and strength no doubt depended in a large degree on the increasing pyloric obstruction. The appendix was demonstrated, by direct examination, to be involved in disease and it was removed prior to making the gastroenterostomy. This may be regarded as a preventive measure rather than a symptom relieving operation. However a careful analysis of the symptoms and signs would suggest that the appendix had been and probably was still a factor in the symptoms.

At the first operation, while the gall-bladder was found distended and involved in adhesions it was not considered wise to subject the patient to the additional strain and shock involved in the removal of the gall-bladder. In fact there seemed to be good reasons to hope that the symptoms would subside after dealing with the ulcer of the stomach and the appendix. An acute attack of appendicitis under the conditions found would have been a serious matter. Our judgment seems to have been justified by the fact that the man returned to work and continued self-supporting for eight years. It is true that he continued to have more or less digestive distress but this did not prevent him from having strength to pursue his occupation on the farm.

When he returned to our care in July, 1929, his strength was again reduced and his digestive disturbances and abdominal pain from "gas" seemed to demand further measures. At this time the gall-bladder was distended and tender and the whole picture seemed to call for the removal of the gall-bladder. This was done in August, 1930.

Due to the extensive adhesions and especially to the adhesion of the gut to the anterior abdominal wall we were unfortunate in injuring the gut. This subjected the patient to a long period of distress due to the fistula and made a final operation for resection and anastomosis necessary.

This case seems to be one in which a series of secondary infections have supervened on the original focal infections in the tonsils, teeth and intestine (Typhoid fever). Your discussion of the relation of these foci to each other and to the secondary conditions for which the several operations were made is earnestly solicited. They well illustrate the desirability of a careful study of the past history in any intraabdominal infection.

We are also interested in your opinions regarding the operative procedures. We realize that there are a number of points on which just criticism can be made. As we have gone back over the case we can see a number of things which might have been done differently.

Finally we do not overlook the fact that we

are presenting a case which has had four serious operations for digestive symptoms which still persist. This fact raises a fair inquiry as to whether surgery was justified or whether better or equally good results might have been obtained from general and medical measures.

How much prospect is there that the patient will still further improve and finally be returned to a reasonable state of usefulness?

DISCUSSION

Dr. M. J. Seifert, Chicago: What type of gastro-enterostomy did you do? The usual low one? As a result of my studies along that line, I believe it is a great mistake to make an anastomosis in the lowermost border of the stomach because one of the fundamental laws of surgery is the non-creation of artificial conditions; when artificial conditions must be created, the mended organs should conform as closely as possible to the normal anatomic and physiologic state, after the operation has been consummated. Your anastomosis, by the laws of gravity and by the intention of the surgeon, will favor an immediate expulsion of foods ingested into the stomach into the enteric canal. This premature expulsion of the gastric contents throws food into the jejunum in a condition inimical to its well-being. Further, food forced through a mere slit often acts as a decided irritant to the lips of the stoma, thus causing subsequent pathology, in the form of complete closure of the gastro-jejunostomy or ulcerations or other pathology in the small bowel.

In the high gastro-enterostomy, such as I have done for many years, an elliptical excision is made in the upper lip of the gastric as nearly on a level, and as close to, the pylorus as the gastric pathology will permit. This operation practically retains normal anatomic relationships. The gastric receptacle thus created continues the mixing, churning and digesting of food—hence, the pabulum when received by the small intestine is physiologically better prepared for further digestive processes. No food passes through the pylorus, as the carefully calculated jejunal tension in this high anastomosis produces a crater-like gastric antrum which, naturally, receives the food before it passes through the new opening. You know how the stomach works, the pylorus is higher than the body of the stomach and, to imitate nature as closely as possible, the food is propelled towards the pylorus in my operation. The food will not jump over the crater-like antrum trying to force itself through the diseased pylorus, but will follow the course of least resistance which is, in this case, through the new stoma, via the crater-like antrum described.

I am sure you will be pleased if you give my method a fair trial. You can see the moving pictures illustrating my technique in the adjoining exhibit-room.

Regarding your statement of focal infections, I would like to make a correction: Dr. Quine, one of the teachers of Billings, was vigorously emphasizing focal infections in his lectures long before Billings ever used that term, but that is neither here nor there.

Dr. Black, I enjoyed your candor in exhibiting a failure very much. It requires some courage, but shows the true scientist trying to learn and trying to teach others important problems in surgery. I consider it a privilege to have the honor of adding my humble discussion to your paper.

I thank you.

Dr. J. H. Bacon, Peoria: It would be interesting to know why certain individuals develop abdominal adhesions and others do not. Why do such massive adhesions develop in some individuals after operations in which the majority would escape with possibly only a few small strands that eventually would stretch and break, while in these few, the adhesions may develop and contract so firmly as to produce obstructions, even years later? Is there any relation between this class and those who develop keloids in scars of the skin? Do these patients lack something in their makeup, just as the diabetic lacks insulin? Is it a lack of some vital element of control that prevents the tissues from doing its work and stopping there when the natural processes of repair have been completed? It is a fruitful field for study. May not this productive growth have some chance relation to that of malignancy?

CHRONIC ULCERATIVE COLITIS*

(Further Studies)

(1836 Proctoscopic Examinations—102 Selected Cases)

M. H. STREICHER, M. D.
Assistant Professor of Medicine, College of Medicine, University of Illinois, Attending Staff, Grant Hospital
CHICAGO

We began this work in 1926. In 1929 we completed our first report of 65 cases. Our results in the past five years have been very encouraging. In the first 65 cases 80 per cent. improvement was noted in cases treated with autogenous vaccine and appropriate diet.

At the present time we are reporting 37 additional cases. Our percentage of improvement has been lowered to 70.6 per cent. Our method of approach, as may be familiar to many, is that of obtaining bacteriologic cultures from the colon through the proctoscope and preparing an autogenous polyvalent vaccine of all bacteria found. The vaccine is given hypodermically to the patient at regular intervals—the dosage varying from 1/200 c.c. to 1.5 c.c., depending on the severity, the extent of the process and the clinical

*From the Research and Educational Hospital, Department of Medicine, University of Illinois College of Medicine, and the Grant Hospital. Presented before the Society of Internal Medicine, January 26, 1931.

progress of the disease. Permit me to mention at this time the necessity of variation in dosage of autogenous vaccine. The amount to be given at the first injection is difficult to determine, while subsequent injections are based on individual susceptibility of the patient as evidenced by the amount and degree of reaction to the injection given. It is relatively simple to cause the patient to go into a protein shock by the slightest overdosage. I have had several very interesting experiences with cases that have developed a form of generalized facial edema following an injection of as little as 1/100 c.c. of autogenous vaccine. The organisms most frequently found are the diplostreptococcus of certain strains, the B. Coli and B. lacti aerogenes either as an individual organism or in association with many other organisms.

As to the frequency of occurrence of ulcerative colitis we find that one case of ulcerative colitis is observed in every thirteen cases of diarrheas. In the accompanying Table A a series of 1,836 proctoscopic examinations are listed, in which 102 cases of ulcerative colitis were selected.

In Table B. you will find that 5 cases died and 5 cases became worse on injections. There is no necessity of apology for the cases that died because they were merely an example of far advanced cases; they were badly neglected over a long period so that practically nothing could be done regardless of the method of approach. The cases that became worse on injections are of special interest to us because they represent cases that are definitely resistant to vaccine therapy, and the apparent cause for such resistance I believe lies within reason of explanation. It has been our experience that whenever we encounter a case of ulcerative colitis in which a hemolytic streptococcus has been found in culture direct or subculture that we have very poor results to expect. In our first series we had about three cases in which the autogenous vaccine therapy proved a total failure—at that time we hesitated interpreting our failure on the basis of the presence of the hemolytic streptococcus in the culture, but are fairly convinced of it with the experience of the additional two cases with identical cultural findings.

As to the advisability of surgery in cases of ulcerative colitis—it is my sincere belief that putting it mildly "it is cruelty to dumb animals" to permit any surgery on early cases of ulcerative colitis; and as far as we have been able to observe or learn from others who have operated on like cases very little has been accomplished. I know of very few cases in which a colostomy or ileostomy has been performed in which a successful reanastomoses has been possible. At a time when the patient with an ileostomy or colostomy was ready for another operation, the adhesions and the local peritonitis was so extensive that the surgeon in question invariably advises that the patient be left alone and permits the ileostomy or colostomy to remain as a permanent rectum with the fecal discharge constantly pouring into a colostomy bag. This situation is not serious when the patient in question is past 60 or 65 years of age, but is certainly distressing to my way of thinking when the patient is in the early 20's or 30's.

It is my sincere desire to impress the reader definitely that I strongly believe that careful medical management, consisting of a diet of low residue, high vitamin and high calory, plus vaccine therapy and removal of distant foci of infection, is the treatment of choice in our opinion, at the present time of all cases of bacterial chronic ulcerative colitis regardless of the stage in which encountered. I wish to add that in no instance have we used any local applications or irrigations of the colon by any standard astringents or antiseptic solutions.

At the present time we are working on a new phase of therapy, and I do hope that if it proves satisfactory that considerable time will be saved by the laboratory technician in the preparation of the vaccine and may eliminate entirely the necessity of culturing every case that is proctoscoped—this becomes essential when a large number of cases are to be differentiated.

There is one point of interest to all of us which I feel should be mentioned at this time

TABLE A

SUMMARY OF 1836 PROCTOSCOPIC EXAMINATIONS OF DIARRHEAS SHOWING FREQUENCY OF OCCURRENCE OF ULCERATIVE COLITIS IN DIARRHEAS

Name of Hospital	No. of Cases of Diarrhea	No. of Cases of Ulcerative Colitis	Ratio
Research and Educational Hosp. Univ. of Illiniis..	1530	74	1/21
Grant Hospital.....	105	8	1/13
Office	181	16	1/12
Other Hospitals.....	20	4	1/5
Average	1836	102	1/13

TABLE B

SUMMARY OF 102 CASES OF CHRONIC ULCERATIVE COLITIS

Before Vaccine Therapy

No. Cases	%	Av. No. of Stools daily	Av. Wt. Loss	Duration	Proctoscopic Observations	Variation in Age
72	70.6	12	20 lbs.	2 yrs.	Stage of Ulceration. Strep. Hem. absent.	18/59 yrs.
16	16	20	25 lbs.	3 yrs.	Stage of Ulceration. Strep. Hem. present.	26/75 yrs.
14	13.4	30	45 lbs.	8 yrs.	Stage of Ulceration.	26/61 yrs.

After Vaccine Therapy

No. Cases	%	Av. No. of Stools daily	Av. Wt. Gain	No. Vaccine Injections	Proctoscopic Observation	Follow Up	Progress and Comment
72	70.6	3	15 lbs.	30	Stage of Inflammation.	4 yrs.	No Symptoms.
16	16	10	5 lbs.	50	Stage of Edema.	2 yrs.	Symptoms present in Mild Form.
14	13.4	15	Cont. to lose	80	Stage of Bleeding.	3 yrs.	5 died. 4 refused injections. 5 worse on injections.

inasmuch as I recently encountered another case in which perforation of the large colon has been produced. These perforations in most cases occur in those of active ulcerative conditions and almost invariably are produced by over inflation of the pneumatic bulb; it is for this reason that I very seldom use air-insufflation in ulcerative colitis or any ulcerative condition.

CONCLUSION

1. In general I believe that conservative medical management is the treatment of choice in chronic ulcerative colitis at the present time.
2. Chronic ulcerative colitis should be considered an infectious process.
3. Favorable results are noted with polyvalent autogenous vaccine therapy.
4. The diet we suggest is that of low residue, high vitamin and high calory.

307 N. Michigan Blvd.

I wish to express many thanks to Miss Johnson, Miss Kaplan, Miss Tankel and Miss Hood for their assistance in this work.

OBSERVATIONS DERIVED FROM TWENTY-ONE CONSECUTIVE CASES OF FRACTURE INVOLVING THE HIP*

FRANK G. MURPHY, M. D.

CHICAGO

The literature on fractures involving the proximal end of the femoral shaft and the hip is voluminous. Before 1900, the subject was studied and written on by many master surgeons of America and Europe, including Nicholas Senn, J. B. Murphy, Hugh Owen Thomas, Theodore Kocher, R. W. Smith, and others equally famed. Fibrous union was the rule rather than the exception in most instances, until Royal Whitman of New York, in 1902, introduced his method of treatment. Since that time several series of cases have been reported with percentages of firm bony union varying from 60 to 90. The statements made in this paper are neither new nor radically different from previous writings of other surgeons, but they include the observations of the treatment of cases as it was carried out at the time rather than the course I would have pursued in the early cases had I had my present experience.

The etiological factors in addition to the predisposing causes usually mentioned of old age, osteoporosis, senile atrophy, diminished blood supply, an angle of 125 degrees with the shaft, and arterio-sclerosis, are few in number. The most important causal factor is *direct force*. The patient usually slips and falls from a standing position, striking the posterior aspect of the great trochanter. This force is exerted in a forward direction so that the strain comes directly on the weak fragile portion of the cervical neck. The proximal portion or head is held securely in the acetabulum; the distal or shaft end receives the impact; the point of greatest strain occurs anywhere between the head and the trochanter and the fracture occurs at that point, viz., the point of least mechanical advantage, by a rotary thrust forward of the great trochanter and upper portion of the shaft on the acetabular portion. Fractures extending through the trochanters and into the upper portion of the shaft are caused by the direct force being applied on the lateral aspect of the trochanter rather than on its posterior surface. Torsion in some cases apparently is the cause of fractures involving

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the upper portion of the shaft as well as the neck.

Immediately the fracture occurs the strong gluteal abductors contract and draw the distal fragment upward and rotate it outward. The ilio-psoas, by its attachment to the lesser trochanter, draws the distal fragment upward and outward, causing the typical eversion and shortening deformity. In a linear fracture without displacement no immediate deformity may occur.

In the present series, even by careful history taking, the patients in no case gave statements that would lead us to believe in the strong muscular contraction theory of fracture before the patient fell. Muscular action, undoubtedly, is the cause of some fractures, probably those involving one of the trochanters. Dr. S. B. MacLeod recently showed a fracture of the lesser trochanter at its junction with the femoral shaft, with inward displacement. It is impossible to conceive the cause of this as being anything except strong muscular tension.

Impaction occurred in three cases. This was not definitely proved, but presumed to be present because of the length of time the patient walked between the time of injury and the time of disability in one case and the absence of deformity in two others. X-ray diagnoses of impaction were occasionally made but when these patients were anesthetized there was no difficulty in reducing the deformity and overcoming the shortening, if deformity and shortening occurred. The diagnosis of impaction is in most cases, I believe, an erroneous view of the super-imposed fragments. Two views or steroscopic views will obviate this appearance. On a fresh cadaver tremendous force is necessary to cause impaction of fragments even though the bone is of a soft spongy type. Impaction cases occasionally have few or no symptoms and the X-ray shows only an indefinite line of fracture, usually intertrochanteric or at the base of neck. This type of fracture accounts for the history we occasionally elicit, of a fall followed by no marked disability. One case of this series shows a fracture of this type in which there was no immediate deformity or shortening but later, due to absorption of the neck, there was considerable deformity, shortening, good union, and good function.

An arbitrary division of the anatomical types of fracture is made, but this is not according to hard and fast rules. Frequently a fracture cannot be placed in any one class but is a combination of two or more types.

1. Subcapital, which is entirely intracapsular at the junction of the neck and the head. Wilson and Cochrane, after many dissections, state that very few of this type occur, but that there is usually a bridging across of periosteum or part of the capsule posteriorly.

2. Transcervical, through the narrow part of the neck. This type is usually partly intracapsular and partly extracapsular.

3. Fracture at the base of the neck which is usually extracapsular.

4. Inter-trochanteric fracture.

5. Transverse fracture below the greater trochanter and above the lesser trochanter, the so-called pertrochanteric fracture.

6. Fractures of the hip involving the upper end of the shaft as well as the trochanters. In these there is usually more or less comminution.

The healing process in hip fractures is still a debatable subject. In true intracapsular fractures the blood supply to the head through the ligamentum teres is negligible, according to Wilson and Cochrane. D. B. Phemister states that asceptic necrosis of the proximal fragment in complete intracapsular fracture of the neck of the femur occurs in a not inconsiderable percentage of cases and that the healing process extends inward from the distal fragment. J. V. Santos states that the vessels of the ligamentum teres may supply adequate blood to keep the head alive even in the aged. J. J. Moorhead believes that non-union is caused by lack of coaptation due to interposition of soft or hard parts. However, the healing process is a slow one and its completion is a matter of many months. Usually the closer the fracture occurs to the trochanters or the more the trochanters are involved, the more sure is the possibility of union. By absolute immobilization in a position of good reduction union may be strong enough to permit voluntary motion in bed without weight bearing at the end of six to nine weeks, but the delicate soft callus must be amply protected against the danger of torsion and bending by adequate splinting from the pelvis to the heel, to bear the weight for four to eight months after immobilization has been removed. X-rays during the treatment are only of value to determine the position of the fragments and the completeness of the reduction. Demonstrable callus formation usually

cannot be shown except in fractures involving the upper end of the shaft. In one of these cases the deeper shadows cast by the proximal fragment seems to lend weight to Phemister's view, that the calcium salts are not being absorbed and that the fragment is, more or less, playing the role of a sequestrum.

Later x-rays, one to two years after the healing process is thought to be completed, frequently show such conditions as coxa vara, shortening of the neck, non-union, and absorption of the neck with attachment of the head on the shaft. These abnormalities with the exception of non-union usually do not prevent very good function. The complete absorption of the soft, spongy bone is a condition which simulates very closely the absorption which takes place in the soft, spongy bone of an injured vertebra following a quiescent period after a back injury, and is known as Kummel's kyphosis.

X-rays taken from one to three years after a fracture has occurred, and after the patient has acquired very good clinical function, often prove to be very surprising and disappointing. The initial reduction and the early x-rays may show very good position and give promise of a good union. The neck goes on to absorption in a large proportion of cases of fractures that occur anywhere inside the inter-trochanteric line. J. Albert Key, of St. Louis, reports a case of impacted fracture, with cast treatment and non-union. Dr. F. H. Albee believes that this area is without blood supply and the procedure in non-union cases is to bring blood to it, through an autogenous bone graft peg. Would this be a logical procedure in fresh fractures of the neck? According to Leriche and Policard, the graft has to regenerate by a process of creeping substitution from the surrounding bone, after the initial death of the graft.

Kellogg Speed states that absorption of the bone may occur even in impacted cases. Frangenheim found that the periosteal covering of the neck was very inactive osteogenetically.

TREATMENT

Why have the different forms of treatment so many advocates? The treatment in this country as well as in European clinics does not seem to be as yet sufficiently standardized. The 1929 report of a commission appointed by the American Orthopedic Association to study the end results of intracapsular fractures of the neck of the femur shows that the usual form of treatment is that devised by Royal Whitman, closed reduction by extension, internal rotation, and complete abduction. The 1930 report of this commission shows that the great majority are being treated by the Whitman method, several by the Ruth method of closed treatment, a few by the Orr-Thompson method, and an increasing proportion by open surgical operation. The Albee method was used in 38 cases; in this an autogenous bone peg was inserted from the trochanter through the neck. The Smith-Peterson method, in which a special flange nail is driven through the trochanter, neck, and into the head, was used in 31 cases. In the series reported in this paper the Whitman method with closed reduction was employed in 15 cases, reduction and extension by the use of sliding traction in three cases, and open operation for old un-united fracture in two cases. One case refused treatment. One case of slipped epiphysis was reduced by open operation. The best results were obtained by use of the Whitman abduction spica cast. There were 13 cases of bony union, one patient died from fat embolism the third day after injury, and the last case is still in the abduction cast. Of the three cases treated by extension, one developed a hemiplegia from a cerebral hemorrhage and died before we could determine by x-ray what type of union had taken place; the second case got good firm bony union with coxa vara, shortening of 1½ inches, but with fairly good function; the third case resulted in non-union and considerable disability. The three cases operated on have fairly good results with stable hips; in one a bone peg was used between the trochanter and the head and in the other the Whitman reconstruction operation was used; the third case of slipped epiphysis has a good result.

The Whitman method of reduction of a fresh fracture is a splendid means of obtaining and maintaining reduction of the fragments. The immobilization is secured and the change in position so necessary in these elderly patients is so easily accomplished that I think it is far better than any other form of immobilization. Special precautions to be advocated to those not thoroughly familiar with its application are first, thorough and complete reduction of the fragments, wide and complete abduction of the lower

fragment which impinges the fractured surfaces on each other and holds the distal fragment in proper alignment with the proximal one, and internal rotation of the limb which stretches the capsule and holds the fragments in position. Perfect anatomical reduction is more easily accomplished in fractures involving the base of the neck, the greater trochanter, and the upper end of the shaft, than in the subcapital fractures. These even after most careful manipulation by the closed method sometimes show some displacement and rotation of the head. A most necessary precaution is the thorough and proper molding of the cast about the bony prominences as it is setting. This should be done by trained assistants.

I wish to express my appreciation to Dr. Henry B. Thomas, Chief of the Orthopedic Service, University of Illinois College of Medicine, for his cooperation and for the privilege of including in this paper three cases from the Department.

CONCLUSIONS

Observations made during the course of treatment and in consultation with patients several years after treatment was completed are:

In transcervical fractures, even though the initial reduction was anatomically very good and union occurred, absorption of a considerable portion of the neck later took place.

Good union usually occurs even with only fair approximation of the fragments, but notwithstanding the poor anatomical reduction, considerable coxa vara, shortening, limited abduction, and absorption of the neck, function is usually very good.

No proven case of fracture by muscular contraction was seen. The usual cause was a fall on the posterior aspect of the great trochanter.

A very disagreeable complication is the presence of a generalized hypertrophic arthritis which especially involves the knee. In these cases immobilization in the cast resulted in marked stiffening of the knee that resisted physiotherapeutic measures for a considerable period.

Timidity and half measures in reducing the shortening, the fracture, the eversion, and the abduction by properly extending, inwardly rotating, and above all, widely abducting the lower fragment will at best result in only mediocre accomplishment.

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DISCUSSION

Dr. Frank C. Murrah, Herrin: I want to emphasize the fact that fractures of the neck of the femur in old people should be handled with a great deal of care. These people die very easily, and personally I would steer clear of any sort of apparatus that would prevent the patient sitting up in bed. I usually put these cases up with just a weight and pulley extension, with sandbags and other things to keep the leg from moving from side to side. Of course, the administration of any sort of anesthetic in an old person about 70 years of age is a serious matter, and I would not think of that. To my mind it is much more important to save the patient's life than to get a good result in the hip. Of course, if you can do both, all right. All these manipulations and peggings, etc., for the purpose of getting a good reduction in these fractures are worth while in younger people, of course.

It simply gets back to the question of the simplest way of getting the fractured ends together and holding them there, and the simplest way is the best for the patient. Sometimes it is a simple matter, and sometimes it takes a very extensive operation. Just why these bones near capsules should not heal as easily as other bones I do not think has been explained. Klinefelter of St. Louis insists that fractures in bones "bathed" by joint fluid throw out very little callus and heal slowly, and further states that such fractures should be held in a cast for a much longer period of time than any other fractures. He states that stiffness in the joint is not due to long immobilization as much as

it is due to lack of immobilization, and also states that taking off immobilization too soon and allowing motion throws out excessive callus sometimes, and you will get stiffness in that way. That applies more to the knee than to the hip.

Dr. Frank G. Murphy, Chicago (closing): All these patients should of course be treated very carefully. If in bad condition it is important that treatment should be palliative for a while. However, as soon as possible I think application of a cast in a Whitman position avoids any further shock which they might get from moving and manipulation. Every time there is manipulation there is irritation and some shock. If you can immobilize the fracture and keep it out to the side, the patient can be turned over in bed and put in a sitting position with no further shock from trauma due to manipulation from the fragments on each other.

MODERN PSYCHIATRY AND CRIMINOLOGY*

MEYER SOLOMON, M. D.
Formerly Director Municipal Psychopathic Laboratory, Associate in Neurology, Northwestern University Medical School
CHICAGO

Psychiatry of the present day is concerned not merely with institutional types of mental disorder but also with all behavior problems. It has left the stage in which its work was confined to patients sent to hospitals for the insane which were isolated from the community. It has gone into the community to study the patient in his home, in the school, in the workshop, in the neighborhood and in social relations. It has become intensively absorbed in the physical, intellectual and emotional makeup of the patient, his handicaps, the influences to which he has been subjected from infancy up to the time of the onset of his mental disorder, and his reactions to these influences. The psychiatrist's interest is not confined to the insane and the feebleminded, but includes the whole range of behavior problems—from the hobo, pauper, dependent, alcoholic and drug addict on the one hand, to the psychoneuroses, maladjusted and eccentric personalities, the behavior problems of children (in infancy, the preschool, grammar school, high school and college stages), parent-child and teacher-child relationships and adult education on the other hand. It has come to see the significance of personal, emotional struggles, of physical health and personal hygiene, of socio-economic-industrial conditions, of proper occupational placement and the like.

Psychiatry is also being used to help in the solution of some of the problems of criminology.

MODERN CRIMINOLOGY

Many different groups are interested in the prevention, detection, judicial disposition and penal treatment of crime, and more and more appreciate that a scientific study of crime and penal methods consists not merely in destructive criticism of older methods, but also in research and investigation, as well as constructive plans for reform. As we have recently been reminded, many of our so-called new views are not so new after all. The basic general principles were enunciated in 1870 in the Declaration of Principles of the present American Prison Association. The dynamic, genetic viewpoint is being developed in criminology, as in other fields of malbehavior.

What drives one individual into a psychosis may drive another to alcohol or drug addiction, another to a psychoneurosis and a fourth to delinquency or criminality. It is therefore plain that efforts must be made to understand the individual delinquent, to study the driving forces both within and without him which brought about his anti-social behavior and to map out as early as possible a proper plan for correction or treatment, in so far as is feasible. This means nothing less than more and more intensive individualization in the handling of each offender and this involves more detailed study, investigation and collection of data concerning each offender.

PSYCHIATRIC APPROACH TO THE PROBLEMS OF CRIMINOLOGY

As Dean Wigmore has stated, the objects of criminal law are:

1. Deterrence or repression of the multitude by the threat of penalities for prohibited acts;

2. Disablement of the individual offender from repetition of his offenses, by a warning, or a fine or confinement;

3. Reformation or cure of the individual offender by indeterminate sentence, parole and probation;

4. Revenge or retribution on the individual offender. The so-called vengeance motive is now practically discarded in modern law, and is not

*Read before the Section on Public Health and Hygiene of the Illinois State Medical Society, May 6, 1931, East St. Louis.

now professed or accepted by the law itself and although once important in primitive law, is now merely a by-product and permits the family and the community to feel a sense of retribution. As we know, children, being immature and too young to understand the threat of the law (the repression purpose), have gradually come to be treated differently through the establishment of juvenile courts, etc. The same applies to those who are mentally incapable of understanding the law's prohibitions and to those who understand them but are incapable of controlling their inhibitions (so-called irresistible impulses). Primarily, the law proceeds from the basic idea of the repression of the multitude, while disablement and reformation of the individual offender are secondary.

More and more it is coming to be realized that in the handling of offenders in the post-juvenile period we need methods similar to those developed in the juvenile courts. It is urged that "anti-social conduct should be considered as dispassionately as a broken leg." Individualization is a sine qua non, and, as White has so well stated it, ". . . . the criminal, and not the crime, should be the matter of prime consideration, and . . . . the sentence or better, the decision of the court, should be calculated to cure the social illness as it has been shown to exist in the conduct of the defendant. All cases of pneumonia are not treated alike just because the disease happens to be pneumonia. The patient is treated and allowances have to be made for age, previous condition of health, of resistance, etc. The patient is treated and not the disease; and it is as illogical to sentence the person who has committed a certain offense to a specific term of imprisonment as it would be to decide, when a patient is admitted to the hospital, the day upon which he shall be discharged." In other words, although according to law it is the act which is a crime and so makes the doer of the act a criminal, psychologically the act is only a symptom which needs interpretation as to cause or causes, prognosis and treatment.

Now, granting that a large proportion of criminal cases are labeled by the psychiatrists abnormal or disordered behavior, it must not, therefore, be concluded that the psychiatrist wishes to label all of these persons legally insane, nor does he desire to mollycoddle them nor minimize their punishment. After all, insanity is now regarded by the rank and file of psychiatrists as a legal or social rather than a medical term and refers to committable mental disorder—mental disorder of a degree requiring commitment to a special hospital for the insane. From the legal standpoint, if a criminal act is the result of wilful, purposely chosen misbehavior, in other words, intent, the individual is sane; while if such act is the result of disease and not consciously and purposely chosen, he is insane. Whereas, from a legal standpoint, the fundamental questions which concern the court are whether the person, at the time of the offense, had sufficient mind to know that the act was wrong and to be able to choose the right and refrain from the wrong, from the medical point of view the main questions to be determined are: Why did he commit the act and how can we remedy it? As Singer has said, "From a practical point of view, does it make any real difference whether we label a man responsible or irresponsible? Would it not be equally pragmatic to hold everyone responsible for his acts, whether sane or insane, and then adopt measures that will 1. insure society against further criminal acts on the part of this person; 2, establish clearly that society cannot, for its own protection, tolerate such acts regardless of the reasons back of them, and 3. rehabilitate the offender if that is possible? These purposes are all that are hoped for from punishment; the introduction of the mythical concept of responsibility merely clouds the issue. Thus, from the psychiatrist's point of view the question is not one of abolishing responsibility, but of ignoring it, and of planning treatment to fit the offender rather than the offense."

There is thus no fundamental conflict between law and psychiatry as to motives and objectives. But how is this to be done unless by personal study of the offender or delinquent or so-called criminal, the probable causes of the misbehavior and an estimate as to the probable outcome and recommendations as to treatment rather than punishment which are indicated to fill the purposes mentioned above. Overholser is well justified in saying, "The history of the treatment of offenders would seem to indicate that punishment in its narrow sense has failed as a method of preventing offenses, and that we must look further if we are to accomplish more than a

temporary detention of offenders and a satisfaction of the primitive lust for vengeance."

One can, as he states, well compare the evolution in the attitude toward the cause and treatment of mental disorders from Pinel and Tuke in 1792 to the present time to what will take place toward offenders against the criminal law in the not very distant future. The history of the evolution in criminal law already shows that at first punishments were very harsh as evidenced by the fact that in 1730 Blackstone mentioned 160 capital crimes on the statute books of England, whereas, as White has put it, "the number of crimes on the statute books that are technically punishable by death are growing less and less, until today the crime of homicide is practically the only one left; and because of the waning tendency of jurors to find the culprit guilty and of judges to sentence him to death this crime is less and less frequently so punished." In 1764, Beccaria founded a school of criminology by which the offense and not the offender was regarded as most important, and by which the judge determined the guilt or innocence but the penalty was fixed by the government according to the gravity of the offense as representing degrees of responsibility. Then, Lombroso, in 1876, in his "Criminal Man," as founder of the so-called "positivist school," insisted that it was the individual rather than the act alone that should be studied and believed crime to be due to mental abnormality of the offender by reason of mental diseases, especially epilepsy, atavism and degeneration, while his colleague, Ferri, emphasized the importance of the reaction of the individual to social and other environmental forces. Minors and the insane were gradually treated differently from others and there have come to pass such individualization in the treatment of offenders as is found in our modern system of probation and parole, indeterminate sentences, reformatories and separate institutions for juvenile offenders, defective delinquents, and the criminal insane. In place of concentrating merely on such questions as responsibility with and punishment indicating a desire for vengeance, we need intensified individual study of each offender. This means that as time goes on our prisons will gradually be transformed into scientific laboratories for study and reorganization of human behavior.

Psychiatric methods of diagnosis and classification have shown the need of careful study of the criminal in addition to the crime. This permits of individual case or personality studies from all points of view, especially psychosocial. The employment of this method will lead to the raising of peno-correctional work to the dignity of a profession.

Social Service and the Professional Attitude in Criminology. It has justly been urged by many, as for instance recently by Stearns, that the whole problem of crime be recognized as a social problem and that our first big job is to introduce social case history and case work into criminology. In the field of juvenile delinquency the ground work has already been definitely laid. Psychiatric clinics are endeavoring the same thing in connection with police and criminal courts and prisons. Even the police department should have the facilities of social service case work. The probation officer of the courts should be a case worker and corresponds to the social worker in a hospital. As Stearns has said: "The whole undertaking of a criminal court is a social service proposition . . . . the court is (like) the out-patient department of the hospital . . . the staff of a prison should be analogous to the staff of a hospital . . . . our present situation is as if there were no visiting staff at the city hospital, individuals being sent there for confinement."

Psychiatric clinics are of great value in juvenile courts, municipal or magistrate or police courts and criminal courts. Their importance in juvenile court work is now unquestioned.

The Psychiatric Clinic in Criminology

Its value to police, magistrate or municipal courts is shown by the work of the Municipal Psychopathic Laboratory of Chicago which works in conjunction with the municipal courts. The primary function of this laboratory is to act in an advisory capacity to all judges of the Municipal Court in connection with the cases of prisoners in whom there is a suspicion on the part of the judge of the existence of some personality disorder, mental disorder or mental retardation. It thus has an opportunity of examining, not merely the frank or suspected mentally disordered or mentally retarded persons but also a certain number of chronic or repeated offenders, chronic alcoholics and drug addicts, chronically dependent and unemployed, and other malad-

justed and inadequate personalities. It has referred to it cases from such specialized courts as the Boys' Court, Morals Court and Court of Domestic Relations, as well as from the unspecialized police courts scattered throughout the city.

From August 1, 1929, to December 31, 1930, during which period I was connected with this laboratory, there were examined in the Municipal Psychopathic Laboratory of Chicago 1,501 separate cases of whom 602 or approximately 42 per cent. had a psychosis of one type or another; 304 or approximately 21 per cent. were mentally retarded; in other words, approximately two-thirds of the cases sent to this laboratory were either mentally disordered or mentally retarded.

It is to be noted that in spite of the fact that we examined a highly selected group of suspected mentally disordered or mentally retarded persons, a little more than one-third were found to be free from a psychosis or mental retardation. The types of psychosis are those usually seen in a psychiatric clinic with a predominance of paranoid states, dementia praecox and chronic alcoholism with deterioration.

I am indeed happy to say that recently, under the new Chief Justice of the Municipal Court of Chicago, John J. Sonsteby, the problems of probation are being studied by a special committee of experts appointed by him, with a view toward improvement by reorganization, and that under the new Clerk of the Court, Joseph L. Gill, the social service department of the specialized courts has been put on a professional basis. This shows a new spirit and a progressive attitude.

There is need of a psychiatric service in the House of Correction.

Psychiatric Service to County Jails and Criminal Courts. Psychiatry can be of help in several respects in connection with the criminal court and county jails.

In Massachusetts since 1921, there has been in existence what is called the Briggs Law. It provides for the following: any person indicted for a capital offense, and any person bound over or indicted for a felony who has previously been convicted of a felony, or indicted more than once for any offense, is under the law to be reported to the State Department of Mental Diseases which appoints two psychiatrists to examine and report on his mental condition, the report to be available to the court, the district attorney, the counsel for the defense and the probation officer.

Under this law, according to Overholser, up to October 15, 1929, 1,114 cases have been reported and 844 or 75.8% examined with the following results: 178 or 21.1% were frankly or suggestively abnormal mentally; of these 178 cases, 40 were insane and committed; 30 were suitable for observational commitment; 82 or 9.7% were mentally defective; 16, psychopathic personality; one, epilepsy; and 9, dull or borderline intelligence. It is to be remembered that this was a selected group with no misdemeanor cases and except in capital cases (30% of the total) they had previously been in court on some serious charge. This law has practically eliminated court contests in Massachusetts so far as psychiatric expert testimony is concerned. A law similar to this in principle could be passed in Illinois.

In Massachusetts, according to Overholser, in the period of 13 years, approximately 11% of those indicted for murder were found insane and so adjudicated by the court.

Of a total of 14,690 cases in the Criminal Court of Cook County for a period of four years, comprising all types of cases, there were only 40 reported insane according to the court records.

So far as the county jail is concerned, Overholser has estimated that approximately 25% of the total population of penal institutions at one time is to be found in the county jail, and furthermore, of the total commitments to penal institutions for a year, almost 90% are commitments to county jails. For the year 1923, for example, approximately 320,000 persons were committed to the county jails in the United States, their average stay in the jails being approximately 33 days each, while in the State of Massachusetts he found that at least 50% of the persons so committed are known to have served previous sentences. What the figures are for persons committed to the Cook County Jail cannot be given, but it would not be surprising if it were found to be about the same as those for Massachusetts.

Of 4,576 male prisoners carefully studied and examined in the county jails of Massachusetts, the same author reports that 42% were from

17 to 30 years of age; 28.2%, 30 to 40 years of age; 42% had been arrested more than five times; 10.5% had served more than five sentences, and 46.3% had served at least one previous sentence. Psychiatric studies of this large group showed the following: 3.2% with a psychosis or neurosis, 7.2% mentally defective, 9% below normal or borderline intelligence, 38.2% alcoholism, 1.1% drug addicts, 15% psychopathic personality (emotional disequilibrium).

It is with pleasure that I add that through Chief Justice John P. McGoorty there is now an Advisory Behavior Clinic at the Cook County Jail which, I am sure, will render splendid service.

Psychiatry can be of value to the courts in the matter of probation by determining the bad risk, the unreformable and incorrigible offender for whom segregation for a sufficient, even indeterminate period is desirable and the good risk, the reformable type, who should be assisted to reorganization within the community, without confinement.

The Value of Psychiatry in Prisons and Reformatories. In spite of the above findings, it is noteworthy that psychiatric service is available in such correctional institutions as state prisons and reformatories and juvenile training institutions, rather than in the county jails and in connection with the courts. As evidence of the value of psychiatry in the state prisons, Martin, quoted by Singer, found that out of 1,700 men examined psychiatrically at Joliet Penitentiary from 1923 to 1927, the more striking types of mental abnormality comprise 22% which were classified as follows:

Psychoses

On admission		
Still present	45	
Now recovered	5	
Within a year of admission		
Still present	15	
Now recovered	7	
More than one year after admission		
Still present	12	
Now recovered	0	
		84 or 5%
Grossly psychopathic persons, including Schizophrenic and Paranoid personalities		
Without behavior problems in prison	79	
With behavior problems in prison	47	
With psychotic episodes	23	
Homosexual (before going to prison)	20	
Convicted of sexual crimes	20	
Alcoholics with deterioration	35	
Drug addiction with psychosis	1	
Drug addiction without psychosis	15	
		235 or 14%
Epilepsy		
With psychosis	5	
Without psychosis	6	
		11 or 7%
Paresis		
Cerebrospinal syphilis without psychosis	23	
		32 or 1.9%
Psychoneuroses (chiefly anxiety states)	13	
		13 or 8%
Total all cases		375 or 22%

Psychiatric clinics can be of value in prisons in connection with the diagnosis and classification of the individual and in giving advice as to occupation, discipline and parole.

As a result of the continued efforts of the American Psychiatric Association through its Committee on the Legal Aspects of Psychiatry, the American Bar Association and the American Medical Association have passed the following resolutions:

1. That there be available to every criminal and juvenile court a psychiatric service to assist the court in the disposition of offenders.

2. That no criminal be sentenced for any felony in any case in which the judge has any discretion as to the sentence until there be filed as a part of the record a psychiatric report.

3. That there be a psychiatric service available to every penal and correctional institution.

4. That there be a psychiatric report on every prisoner convicted of a felony before he is released.

5. That there be established in each state a complete system of administrative transfer and parole and that there be no decision for or against any parole or any transfer from one institution to another, without a psychiatric report.

As to the efficiency and inefficiency of our present penal system, a recent study entitled "Five Hundred Criminal Careers," by Sheldon Glueck and Eleanor T. Glueck, shows that out of 510 men who left the Massachusetts State Reforma-

tory at Concord, Massachusetts, 1911 to 1922, 80% were not reformed five to fifteen years later, but were still committing crimes. The fact that the average age at the time of commitment was 20.1 years, that over 60% were 20 years or younger at the time of entrance to the reformatory and that the average age of the first arrest was slightly over 16, shows that the problem is one of youth. These findings also show that the reformatory and parole have not functioned as efficiently as they should.

The Need for a Greater Variety of Institutions. Although it is estimated by the average layman that a certain proportion of persons who commit criminal acts are actually legally insane and need definite medical treatment in a hospital for mental disorders, the modern psychiatrist goes further and contends that many other individuals who are not legally insane in the sense above mentioned are nevertheless in need of special treatment in special types of correctional institutions. The psychiatrist contends that the mental history and condition of the offender is of great importance for guidance as to disposition. He holds that the present method of sentencing all offenders is comparable to what would be the case if all sick persons were sent to hospitals for a definite period with specific instructions that at the end of this fixed period these patients be sent home no matter whether they have made an early recovery or have developed serious complications.

The advisability of indeterminate sentence in special types of institutions is particularly important in the case of chronic or repeated or so-called habitual offenders or criminals. It is for this reason that there should be a special type of institution for the adult defective, that is, feeble-minded delinquent, as already exists in Massachusetts and New York. Delinquent defectives should not be in the same institution with non-delinquent defectives. The atmosphere of this special type of institution should be educational especially along manual, agricultural and industrial lines, rather than penal and an indeterminate sentence to such an institution is superior to sentencing the delinquent for fixed periods in the House of Correction and penitentiary. It should be remembered that defective delinquency is a combination of a so-called psychopathic or unstable personality with feeble-mindedness. Of course, there could also be instituted the registration method for feeble-mindedness employed in Massachusetts and the community control of the feeble-minded developed in that state.

There are also needed separate institutions for so-called psychopathic personalities with habitual criminality, who should also be given an indeterminate sentence with conditional release and with continued supervision and guidance as for parole prisoners. Many of these so-called psychopathic personalities who are confirmed or habitual criminals, so-called recidivists, are now confined in prisons, reformatories, houses and schools of correction, state hospitals for the insane and institutions for the feeble-minded. If entirely separate institutions for such individuals are not provided, then they should be handled in special divisions of the penitentiary.

Chronic alcoholic and drug addicts are in need of indeterminate sentence and prolonged supervision in farm or industrial colonies.

For the frankly criminal insane, modern hospital facilities are in order.

CONCLUSIONS

Modern psychiatry is interested not merely in institutional psychiatry but also in all behavior problems, including those of criminology. The findings of the Municipal Psychopathic Laboratory of Chicago and other similar clinics are discussed.

Psychiatry's contributions to criminology include the detection and separation of the mentally deranged and mentally retarded, the study of other maladjusted personalities with suggestions for their disposition, advice in probation and parole cases, the more intensive individual study of delinquents and criminals with an estimate of probable causes, outcome and recommendations for management. The basis of the psychiatric approach is a professional, progressive, scientific attitude toward the problems of criminology. Psychiatry has its legitimate place in the schools, police departments, courts, county jails, houses of correction, reformatories, prisons, as well as in private practice and public institutions for mental cases.

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185 North Wabash Avenue.

THE NURSE'S HEAVEN

When earth's last microbe has fainted,
When catgut lies twisted and dry,
When all carbolfuchsin has faded,
And the youngest patient has died,
We shall sleep—and faith we shall need it!
Lie down for an aeon or two,
Till the Master of all good nurses
Shall call us to work anew.
And we who were cross shall be happy,
Have plenty of sunshine and air,
Use all the gauze that is needed,
With no one to watch or to care.
We shall have real saints to work on
Magdalene, Peter and Paul,
We shall sleep all night without hypos,
And have no hysterics at all.
And only the Master shall praise us,
And only the Master shall blame,
And no one shall work for money,
And no one shall work for gain,
But each for the joy of working,
And each in her separate star
Shall see the divine in her patients
And love them just as they are.

—Anonymous, from *Chicago Hosp. Assoc. Bull.*

Chocolate Bar: What am dese here dark specks in dis here oatmeal?

Dusky Man: Keep youh coat buttoned. Dem dark specks in dat dar oatmeal am dese here things dey call calories.—*Middlebury Blue Baboon.*

Society Proceedings

COOK COUNTY

CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY

Meeting, October 7, 1931

"Treatment of Tendon Injuries".....Sumner L. Koch
Discussion .....R. W. McNealy
General Discussion.....Opened by the President
Fred W. Slobe, Pres. Sam'l S. Graves, Sec'y
F. P. Hammond, Program Chairman

CHICAGO ROENTGEN SOCIETY

Meeting, October 14, 1931

Symposium on Pathological Gall Bladder
Medical Aspect.....Milton M. Portis
Surgical Aspect.....Peter S. Clark
Roentgenological Aspect.....Davis S. Bielen
General Discussion
G. M. Landau, Pres. R. J. Maier, Sec'y

CHICAGO MEDICAL SOCIETY

Joint Meeting with Central Association of Obstetricians and Gynecologists

October 28, 1931

The White House Conference—General Facts and Its Activities .....Fred L. Adair

Maternal Mortality .....
Palmer Finley, Omaha, Neb., and W. C. Danforth
The Midwife Problem.....
Percy W. Toombs, Memphis, Tenn., and F. H. Falls
Medical Education and Its Relation to the White House Conference.....
J. C. Litzenberg, Minneapolis, Minn., and E. D. Plass

DE KALB COUNTY

Thursday, Oct. 22, 1931, the DeKalb County Medical Society was entertained for dinner by St. Mary's Hospital, DeKalb, Ill. Members of the Hospital Staff furnished the program.

Nineteen physicians were present. The following were elected by the County Medical Society to serve as the officers during the year 1932: President, Dr. Clifford E. Smith, DeKalb, who has served twelve years as secretary and treasurer; vice-president, Dr. Wendall A. Potter, Sandwich; secretary-treasurer, Dr. James C. Ellis, DeKalb; censor for three years, Dr. Elbridge W. Telford, DeKalb; censor for two years, Dr. Louise L. Culver, Sandwich; censor for one year, Dr. James S. Rankin, DeKalb; delegate of one year, Dr. Percy I. Hopkins, DeKalb, and alternate delegates for one year, Dr. R. A. Wright, DeKalb.

Dr. E. W. Telford presented a case of acute osteomyelitis of the femur in a little girl seven years old. An excellent recovery followed drilling of the bone for drainage purposes.

Dr. S. L. Anderson reported a case of multiple infected ovarian cysts which were drained through a laparotomy incision.

PIKE COUNTY

The Pike County Medical Society met in Barry, Thursday, October 22, 1931.

Dinner was served to the visiting medics by the ladies of the Methodist Episcopal Church, and was such a feast of fried chicken and all the accompanying good things that could be desired to go with it, as the ladies of Barry are well and favorably known for.

The meeting was called to order by Vice-President Rutledge, the President, Dr. T. D. Kaylor, being temporarily absent.

The Secretary stated that the minutes of the last meeting were printed in the State Journal, and moved to dispense with reading them, and the motion carried. There was no other business except that it was voted to establish a "flower fund," making an assessment for same each year.

The first number on the program was a paper on "The Child" by Charles D. Center, M. D., of Quincy. Dr. Center began with the statement that "every child under twelve years of age, who is persistently and continuously bad, is a sick child." From this opening statement he proceeded to show some of the many pathological conditions which tend to cause mental as well as physical abnormalities in the child, and that these children should come to the doctor for his kindly consideration and treatment. This paper brought us face to face with the fact that we must not consider the bad child as just bad, and let him go at that, but as they come into our hands we must use every possible means to discover physical abnormalities, and to correct them, in the hope of correcting the mental abnormalities in so doing.

The second paper, given by Dr. Dudley T. Dawson of Danville, was upon "Duties and Responsibilities of the Psychiatrist to his Community." In a very informal manner, Dr. Dawson gave his interesting paper almost entirely avoiding the technical in his talk. Very fittingly his paper followed Dr. Center's, in consideration of mental conditions. The speaker quoted well-known authorities upon the respective importance of heredity and environment as factors in mental development, and told interestingly of his experience in court, in mental cases; with backward children and misfits in school; with mental misfits in society, generally, and once again brought to our attention the great importance of his specialty: of the work of the psychiatrist in his community.

The third paper on the program was given by Dr. T. B. Knox of Quincy, upon "Lay Relations with the Veterans Administration." Dr. Knox briefly pictured the work of the Examiner under the old or Service Connected Law, and how we are again going through a similar experience under the new law, which does not require that a disability to be compensible must be "service connected." He stated that he believed that 90 per cent of all cases either had, or were sincere in the belief they had compensible disabilities; that "the gold-bricker" was not more than one in ten of the applicants. He gave us much information as to what to do in making application, and cited some interesting cases that had come to him in his experience as an examiner.

The fourth paper on the program was given by Dr. Warren Pearce of Quincy. He opened his remarks by giving us a symptom-picture of a recent case of his which he diagnosed as poliomyelitis-anterior, and from this starting point gave us a very profitable, timely and interesting discourse upon Anterior Poliomyelitis. Especially was this paper timely, because of the present prevalence of Infantile Paralysis all over the country. Drawing on his personal experience, and upon the authors as well, Dr. Pearce handled the subject in a thoroughly scientific and scholarly manner.

All the papers given were pretty thoroughly discussed, nearly all the doctors present taking part in the discussions.

Colonel Holland of Springfield, who came with Dr. Dawson, spoke very briefly on Veterans Administration work, and his remarks were well received.

Aside from the speakers named several Quincy men were with us, making a total attendance of 25.

A vote of thanks was tendered to those who gave the program, and to the Barry brethren for their delightful entertainment. The meeting adjourned in due form to meet in Pittsfield in January.

F. N. WELLS, M. D., Secretary.

RANDOLPH COUNTY

The Randolph County Medical Society held a meeting at Sparta, October 20th, beginning with a luncheon at the Bates Hotel. The entertainment was given by the Ladies Auxiliary. Randolph County has a very active working organization headed by Mrs. C. O. Boynton, who presided during the social hour preceding the Scientific Program. Honored guests were the speaker of the evening Dr. J. C. Lyter of St. Louis and Drs. W. H. Smith, J. E. Reed and Edward Tegtmeier of the Illinois Department of Public Health. Dr. Lyter spoke on the heart and his lecture was enjoyed by all and discussed by many of those present.

The doctors were grateful to Dr. Lyter and the able efforts of Mrs. Boynton and the other members of the Auxiliary for the successful meeting.

WILL-GRUNDY COUNTY

The Will-Grundy County Medical Society and Public Health Council desiring to reduce the infant and maternal mortality of the community and feeling that throughout a union of their combined efforts greater benefits will result, do hereby subscribe to the following plan:

1. The Public Health Council to furnish the nurses, clerks, and social service workers to carry the services provided to the public and keep accurate records of the patients benefiting thereby, together with an economic rating of all such patients.

2. The Will-Grundy County Medical Society to provide the medical and surgical service needed at rates within the reach of all.

3. To regulate the details for carrying out this plan and such matters as may arise from time to time there shall be appointed a committee consisting of a representative of the Public Health Council, one physician named by the Medical Society, and the health commissioner of Joliet.

4. A tentative detailed plan is hereby offered.

(a) It shall be the function of the field nurses and social workers to locate pregnant women as early in pregnancy as possible, to teach them the need for and urge them to avail themselves of prenatal care throughout their pregnancy.

(b) If economic reasons prevent the patient from availing herself of this care, the field worker should advise her of the service at reduced rates made available through the Public Health Council and local Medical Society.

(c) The patient may then make application through the Public Health Council for this service, stating her husband's occupation and salary, any other source of income, number of dependent members of family, number of rooms occupied, rent paid, or whether home is owned and if so is it mortgaged.

(d) The Public Health Council will check up further on the economic condition of the patient through the Joliet Credit Bureau and the family physician, if she has one.

(e) The patient then will be given a card entitling her to service on approximately the following basis from the physician of her choice.

(1) Family income of $1,000 to $1,256 annually—yellow card—(half usual fee).

(2) Family income $750 to $1,000 annually—red card—(third usual fee).

(3) Family income $500 to $750 annually—green card—(fourth usual fee).

(4) Family income nothing to $500 annually—purple card—(fifth usual fee).

(5) One hundred dollars ($100) added to the above maximum for each dependent member of the family.

(6) Patients now supported by the township, county, or other charities to be cared for free of charge by township or county physician.

TRI-COUNTY MEDICAL SOCIETY

The Tri-County Medical Society held its Annual Meeting at the Elk's Club, Monmouth, on Thursday, October 15, 1931, beginning at 4:00 p. m. Dr. Ralph Graham, president of the Warren County Medical Society, the host society, was in the chair.

Dr. G. H. Marquardt, Clinical Assistant in Medicine, Northwestern University Medical School, Chicago, was the first speaker, and talked on "Vascular Pains and Vascular Edema of the Legs—Their Diagnosis and Treatment." This talk was a very interesting discussion of this highly interesting subject, which was well presented, and discussed by a number of those present.

The next speaker was Dr. Lowell D. Snorf, Associate Professor of Medicine, Northwestern University Medical School, Chicago, whose subject was "Treatment of Peptic Ulcer and Its Complications." Dr. Snorf referred to the management of these conditions, and laid special emphasis on the recognition and treatment of the several complications of gastric and duodenal ulcer. This too was freely discussed by members and visitors in attendance.

Dinner was served at 6:30 to approximately 150, and a short dinner program was given. Dr. Andy Hall, Director of the Department of Public Health, of the State of Illinois, gave an interesting talk on the work of the State Health department, referring to some interesting statistics recently compiled, showing that Illinois led all other large states in low death rate, at the present time. He also told of the distribution of convalescent serum in the treatment of poliomyelitis and some of the results from its use, reported recently throughout Illinois.

Following the dinner, Dr. Harold O. Jones, Associate Professor of Obstetrics and Gynecology, Northwestern University Medical School, Chicago, demonstrated his new motion pictures with sound. Although only scheduled for one subject, "The Treatment of Pelvic Infections," Dr. Jones was persuaded to show other interesting pictures, which were greatly appreciated. There was a general discussion of a number of interesting features in connection with the operations demonstrated.

The Tri-County Medical Society was formed some fifteen years ago, and has had interesting meetings each fall since its origin. There were approximetaly 160 at this meeting, many of whom came more than 100 miles,

to be present. There were many physicians from Eastern Iowa, in addition to the large number from Central and Western Illinois. Three members of the Council of the Illinois State Medical Society were present,—Drs. E. P. Coleman, of the 4th District, S. E. Munson, of the 5th District, and Chas. D. Center, of the 6th District. A check up of the attendance shows that there were physicians from 24 counties, which shows that even in rural communities, physicians are ever anxious to attend good medical meetings.

The Warren County Medical Society is indebted to the Educational Committee of the Illinois State Medical Society, for their assistance in arranging the program, especially to Miss Jean McArthur and Dr. James H. Hutton.

CHAS. P. BLAIR, Secretary,
Warren County Medical Society.

Marriages

NEAL DOW CRAWFORD, South Pekin, Ill., to Miss Bernadine L. Potts of Deer Creek, September 1.

BEN FRANKLIN KILGORE, Waterloo, Ill., to Miss Florence Martha Gieseke at Monmouth, September 15.

PAUL BUDD MAGNUSON, Chicago, to Miss Laura Chandler Thompson of Lake Forest, Ill., in Barrington, September 26.

CHARLES PHILLIP MILLER, JR., Chicago, to Miss Florence Lowden, at Sinnissippi Farm, Oregon, Ill., October 20.

Personals

Dr. James B. Herrick addressed the Medical History Club of the University of Illinois College of Medicine, Wednesday, October 28. Subject: "Auenbrugger and Laennec."

Dr. James H. Hutton, Chicago, addressed the La Salle County Medical Society, October 27, on "Recent Advances in Endocrinology."

Dr. Michael Goldenburg, Chicago, addressed the Peoria City Medical Society, October 20, on "Diseases of the Eye Encountered in General Practice."

The Stephenson County Medical Society was addressed, October 15, by Drs. Emmet B. Bay, Chicago, on "Cardiographic Tracings"; Bayard T. Horton, Rochester, Minn., "Buerger's Disease"; William T. Coughlin, St. Louis, "Brain Tumors."

At the fifty-fourth annual meeting of the Chicago Gynecological Society, October 16, Fay-Cooper Cole, Ph.D., spoke on "Ethnological Status of Woman," and Dr. Morris Fishbein, "Two Famous Women of the Nineteenth Century."

Dr. S. M. Feinberg addressed the Will-Grundy society at Joliet, November 4, on "Allergy in Everyday Practice."

Dr. M. Herbert Barker, Chicago, addressed the Lake County, Indiana, Medical Society, October 8, on "The Management of Chronic Nephritis."

Dr. Frank P. Norbury of Jacksonville addressed the Sangamon County Teachers Institute at Springfield, October 23 on the subject, "Mental Hygiene in the Family."

Dr. Joseph Colt Bloodgood, Baltimore, addressed the Chicago Dental Society, October 8, on "Oral Cancer."

Dr. Leopold Benno Bernheimer, among others, addressed the Chicago Society of Allergy, October 19, on "Allergic Nasal Disease."

Dr. Ralph A. Kinsella, St. Louis, addressed the Adams County Medical Society, October 12, on "Treatment of Streptococcal Infections."

Dr. Arthur E. Hertzler, Kansas City, Mo., addressed the Vermilion County Medical Society, October 6, on goiter.

The Chicago Neurological Society was addressed, October 22, by Dr. Joseph A. Luhan, among others, on "Some Postural Reflexes in Man."

Dr. Sumner L. S. Koch addressed the Chicago Society of Industrial Medicine and Surgery, October 7, on "Treatment of Tendon Injuries."

Dr. Francis E. Senear, Chicago, addressed the Peoria City Medical Society, October 6, on "Modern Conceptions Concerning the Treatment of Syphilis."

The Chicago Ophthalmological Society was addressed, October 19, among others, by Dr. Vilray P. Blair, St. Louis, on "Blepharoplastic and Ptosis Operative Procedures."

Dr. John A. Bigler, Highland Park, Ill., among others, addressed the Chicago Pediatric Society, October 20, on "Effect of Tonsilectomy and Adenoidectomy on the Schick Reaction."

Dr. Evarts A. Graham, St. Louis, addressed the St. Clair County Medical Society, October 1, on "Lowering the Mortality After Operations on the Biliary Tract."

Dr. John de Jarnette Pemberton, Rochester, Minn., addressed the Sangamon County Medical Society, October 1, on "Problems in Surgery of the Thyroid Gland."

Dr. Augustus C. Pohlman, St. Louis, gave an illustrated address on "Anatomic Fundamentals of the Mechanics of Audition" before the Chicago Laryngological and Otological Society, October 5.

Dr. William Bloom addressed a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine, October 23, on "Recent Studies on the Origin and Interrelationships of the Blood Cells."

Dr. Charles F. Harmon, Springfield, has been appointed chief of the division of social hygiene in the state department of public health, succeeding Dr. Ira Chester C. Copelan, who held the position about eleven years. Dr. Harmon's appointment became effective, October 1.

Dr. Max Cutler, formerly director of cancer research, division of cancer, Department of Hospitals, New York, has been appointed director of the recently established tumor clinic at Michael Reese Hospital. The formal opening of the clinic took place, October 9, at which time the Louis A. Greensfelder Memorial Lectureship was given.

Dr. Russell M. Wilder recently resigned as professor of medicine at the University of Chicago to join the staff of the Mayo Clinic and the faculty of the Mayo Foundation Graduate School of the University of Minnesota in a similar capacity. Dr. Wilder was formerly connected with the Mayo Foundation. He has been at the University of Chicago since 1929.

News Notes

—The Michael Reese Hospital will conduct a course on oxygen therapy, November 17-20. There will be lectures, discussion and demonstration of the principles and application of oxygen therapy, the use of carbon dioxide-oxygen mixtures in various conditions and the important types of oxygen therapy and resuscitation apparatus.

—Sir Thomas Lewis, English cardiologist and member of the National Research Institute of London, delivered the first Frank Billings lecture of the Thomas Lewis Gilmer foundation of the Institute of Medicine at the Murphy Memorial hall October 31.

—A symposium on the pathologic gallbladder featured the meeting of the Chicago Roentgen Society, October 14. The speakers were Drs. Milton M. Portis, Peter S. Clark and David Beilin.

—Sir Thomas Lewis, London, gave the first Frank Billings Lecture of the Thomas Lewis Gilmer Foundation, October 31, on "Pain in Muscular Ischemia and Its Relation to Anginal Pain." This will be a regular meeting of the Institute of Medicine of Chicago.

—The Chicago Pathological Society was addressed, October 12, among others, by Drs. P. Arthur Delaney on "Dual Carcinomas, Primary in the Lung and in the Prostate," and Graham A. Kernwein, "Combined Congenital Exstrophy of the Female Urinary Bladder and Cloaca."

—Four new educational bulletins on health, published by the state department of public health, are now available for free distribution in the state. The titles of the bulletins are Tularemia in Illinois, Infantile Paralysis, Animal Experimentation, and Diet, Health and Intelligence.

—The third annual William T. Belfield Lecture of the Chicago Urological Society was delivered, October 29, by Dr. Anton J. Carlson, professor of physiology, University of Chicago, on "Rejuvenation."

—At a meeting sponsored by the Logan County Medical Society, September 24, more than 200 physicians of Central Illinois were addressed, among others, by Dr. Budd Clarke Corbus, Chicago, on "Newer Ideas in Immunology," and Dr. Harry Mortimer Richter, Chicago, "Gastric and Duodenal Ulcers," illustrated.

—An outbreak of scarlet fever, involving at least nine cases, occurred in Alton and vicinity during the first two weeks of September. A raw milk supply from a local dairy was held responsible for the outbreak in Alton. The dairy was immediately closed. It was the first milk-borne epidemic in the state since October, 1929, when there was a milk-borne outbreak of typhoid in Carbondale.

—Dr. Allen O. Whipple, professor of surgery, Columbia University College of Physicians and Surgeons, New York, addressed the Chicago

Surgical Society in joint session with the Institute of Medicine of Chicago, October 2, on "Anatomical and Physiological Variations in the Duodenum Considered from Embryological and Clinical Standpoints." This was the third annual Arthur Dean Bevan Lecture of the Chicago Surgical Society.

—A resolution was adopted at a meeting and dinner of the Marion County Medical Society, September 24, in Centralia, which provided for the formation of a tri-county medical society to include the counties of Washington, Clinton and Marion. The president of the society was instructed to appoint committees to perfect the organization. The guest speakers included Drs. Jonas Curtis Lyter and Frank J. Tainter, St. Louis, whose subjects were "Bronchial Asthma" and "Pain in the Anatomical Region of the Fifth Nerve," respectively.

—The new laboratory building of the University of Illinois College of Medicine, which was opened with the beginning of the fall term, October 5, was erected at a cost of $1,500,000. The first floor is given over to the administrative offices and office of the dean; the second, to physiology; the third, to physiologic chemistry; the fourth, to pharmacology, and the fifth, sixth and seventh to anatomy. Other buildings in the proposed medical center at Illinois, which have been completed, are the general hospital and outpatient department, research laboratory and library building, orthopedic and psychiatric institutes, institute for juvenile research, nurses' home and power plant. The building planned for the college of dentistry will also house the departments of bacteriology and pathology. The state department of public welfare is cooperating with the university in this building program.

—As a number of doctors from Illinois and neighboring States were members of the physicians' tourist parties that visited Vichy in the last two years and as others may be contemplating doing so next year, it is of interest to note that the International Congress of Biliary Lithiasis will take place at Vichy, France, during the last days of September, 1932. The meetings will be held in the new Thermal Establishment now in process of completion at Vichy, that institution, with its unique equipment, will furnish a most suitable setting for a meeting of this character. This Congress will be the first of a series of similar medical gatherings at Vichy to consider diseases of the liver and affections related to it.

Deaths

GEORGE SHERIDAN CULVER, Sandwich, Ill.; Hahnemann Medical College and Hospital, Chicago, 1893; member of the Illinois State Medical Society; formerly mayor of Sandwich; aged 64; died, September 29, of heart disease.

WILLIAM ALLEN DIXON, Decatur, Ill.; Kentucky School of Medicine, Louisville, 1892; Illinois Medical College, Chicago, 1895; formerly member of the board of health; aged 65, died, September 11, of diabetes mellitus.

GEORGE B. M. ERWIN, Granite City, Ill.; Barnes Medical College, St. Louis, 1900; aged 68; died, September 2, of cerebral hemorrhage.

HARRY M. FERGUSON, Morris, Ill.; Rush Medical College, Chicago, 1890; a Fellow, A. M. A.; past president of the Grundy County Medical Society; aged 61; died, September 4, of angina pectoris.

FRANCIS MARION INGALLS, Highland Park, Ill.; Rush Medical College, Chicago, 1888; a Fellow, A. M. A.; aged 71; on the staff of the Highland Park Hospital, where he died, September 22, of cholecystitis.

JAMES R. KENTON, Raymond, Ill.; Beaumont Hospital Medical College, St. Louis, 1899; a Fellow, A. M. A.; aged 61; died, September 22, of carcinoma.

HOWE BAYARD LANGSDALE, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1908; member of the Illinois State Medical Society; on the staff of the Ravenswood Hospital; aged 45; died, September 23, in St. Luke's Hospital, of acute pyelonephritis following nephrectomy for removal of stone in the left ureter.

HENRY BALDWIN LLOYD, Evanston, Ill.; Tennessee Medical College, Knoxville, 1899; aged 61; died, August 28, in the Evanston Hospital, of mesenteric thrombosis and peritonitis.

CHARLES HOPKINS LONG, Chicago; McGill University Faculty of Medicine, Montreal, Que., Canada, 1888; on the staffs of the Illinois Eye and Ear Infirmary, and the Post Graduate Hospital; aged 67; died August 19, in the St. Francis Hospital, Escanaba, Mich., of injuries received in an automobile accident.

SAMUEL LUTHER MCCREIGHT, Oak Park, Ill.; Rush Medical College, Chicago, 1885; aged 82; died, September 27, of chronic myocarditis and arteriosclerosis.

PERRY C. THOMPSON, Evanston, Ill.; Rush Medical College, Chicago, 1883; member of the Illinois State Medical Society; aged 81; died, August 13, of heart disease.

HENRY W. WOLFE, Tamaroa, Ill.; Barnes Medical College, St. Louis, 1898; member of the Illinois State Medical Society; aged 61; died, September 18, of heart disease.